Air Resources Board

Mary D. Nichols, Chairman
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Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

January 31, 2013

Deborah Jordan
Director, Air Division
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105-3901

Dear Ms. Jordan:

As you know, the U.S. Environmental Protection Agency (EPA) conducted a Technical System Audit (TSA) in 2011 of the California Air Resources Board (CARB) and three Monitoring Organizations (MOs) within CARB's Primary Quality Assurance Organization. EPA reviewed the overall ambient air monitoring programs including network management, field operations, laboratory operations, data management, and quality assurance. We received your final report identifying areas of possible improvement on October 22, 2012.

Overall, CARB agrees with EPA's findings and is committed to addressing the concerns identified in the TSA. Using the Corrective Action Form developed by EPA, CARB and the MOs have documented the actions taken or planned to address the findings, an implementation timetable, and a point-of-contact for each of the corrective actions. Attached is a report describing the TSA process as well as responses to the major findings. The report includes a summary spreadsheet of the findings, as well as the individual corrective action forms.

We appreciate the opportunity to work with you to improve our monitoring program. If you have any questions or need additional information regarding the corrective action responses, please contact Mr. Michael Miguel, Chief of the Quality Management Branch, at (916) 322-0960 or via email at mmiguel@arb.ca.gov.

Sincerely,

James N. Goldstene
Executive Officer

Attachments

cc: See next page

cc: Mr. Christopher D. Brown, APCO
Mendocino County AQMD
306 E. Gobbi Street
Ukiah, California 95482-5511

Mr. Brad Poiriez, APCO
Imperial County APCD
150 South 9th Street
El Centro, California 92243-2801

Mr. Seyed Sadredin, APCO
San Joaquin Valley APCD
1990 E. Gettysburg
Fresno, California 93726

Michael Miguel, Chief
Quality Management Branch

California Environmental Protection Agency
Air Resources Board

Response to U.S. EPA's 2011 Technical System Audit of Air Quality Monitoring Programs in California

January 2013

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1. Executive Summary

The California Air Resources Board (CARB) is the agency delegated under State law with the authority and the responsibility for collecting ambient air quality data as directed by the Clean Air Act of 1977, and the Clean Air Act Amendments of 1990. As stated in the Federal Code of Regulations (CFR), the U.S. Environmental Protection Agency (EPA) has defined CARB as the Primary Quality Assurance Organization (PQAO) for all of California, with the exception of the Bay Area Air Quality Management District, the South Coast Air Quality Management District, and the San Diego County Air Pollution Control District, which have also been identified as PQAOs.

A PQAO is a monitoring organization or a coordinated aggregation of such organizations that is responsible for a set of stations that monitors the same pollutants and for which data quality assessments can logically be pooled. Of the 35 monitoring organizations (MO) in California, 21 collect ambient air monitoring data and are considered part of the CARB PQAO. Although both CARB and MOs operate ambient monitoring stations throughout the State, responsibility for ambient air monitoring ultimately rests with CARB. Further, it is the responsibility of CARB to provide Quality Assurance (QA) oversight to ensure that data quality within the CARB PQAO meets Code of Federal Regulations (CFR) requirements and conforms to quality standards approved in the Quality Assurance Project Plan (QAPP).

The EPA conducted a Technical System Audit (TSA) of CARB's ambient air monitoring program in 2011, and issued a final report identifying areas of possible improvement on October 22, 2012. A TSA is an on-site review and inspection to assess compliance with established regulations governing the collection, analysis, validation, and reporting of ambient air quality data. It is one of the ways that EPA provides oversight to ensure that data collected meet certain minimum data quality objectives. Other assessments, such as network reviews and performance audits, are also used to collect information on the overall quality of ambient air monitoring data. These assessments enable MOs to identify and correct those program elements which may adversely affect the quality of ambient air data. Since CARB oversees the quality of the data collected by MOs within the CARB PQAO, three MOs were also included in the review: San Joaquin Valley Air Pollution Control District, Imperial County Air Pollution Control District, and Mendocino County Air Quality Management District.

Acceptable data quality is necessary to meet federal requirements and maintain data defensibility in regulatory decisions. The EPA identified six key TSA findings that need to be addressed to bring the State into compliance and ensure continued grant funding. CARB agrees with EPA's findings and has already taken steps, including the creation of a new group of technical experts in the air monitoring program, to ensure that the CARB PQAO meets the federally mandated requirements. The following table summarizes these findings as well as the actions taken or planned by CARB and MOs. Attachment A summarizes EPA's findings and the proposed corrective actions. Attachment B provides the individual corrective action forms for each finding. The corrective action forms list the finding, description of the issue, the actions taken or planned by CARB or the MO, an

implementation timetable, and a point-of-contact. The form is designed to track the progress of the corrective actions and verify the findings were adequately addressed.

Table of TSA Key Findings and Actions Taken or Planned by CARB and MOs

Finding	Actions Taken/Planned by CARB and MOs
1. Need to formalize the structure of CARB Primary Quality Assurance Organization (PQAO)	• Created a new technical oversight group and hired temporary staff • Hire five new staff to focus on PQAO activities and act as liaisons between CARB and MOs • Revising documents to formalize CARB policies and define roles and responsibilities • Providing quality assurance support and oversight
2. Lack of approved/adopted quality system documents	• Finalizing quality management plan • Develop quality assurance project plan • Assessing MO quality system documents • Developing and maintaining web page to share updates/changes/additions to quality system documents
3. Unsatisfactory network management: network plans, network assessments, site closures, and data certification have been inconsistently managed across air MOs in California	• Summarize and evaluate MO network plan information. Work with MOs to address any deficiencies. • Include MOs in the network plan if they do not intend to prepare their own • Work with EPA to develop assessment tools to conduct a Statewide assessment. • Participating in monthly conference calls to discuss air monitoring issues including site moves/changes/closures
4. Data validation: lack of coordination and training has resulted in inadequate and inconsistent data validation	• Developing a comprehensive training program that addresses field operations, quality assurance, data validation, and instrumentation • Conducting data audits as part of the TSA process • Developing and conducting data evaluations by using statistical validation tools
5. Inconsistent field operations	• Developing a comprehensive training program that addresses field operations, quality assurance, data validation, and instrumentation • Enhanced audit program to include an evaluation of field operations • Improve communications by having quarterly meetings for all field staff
6. Coordination between CARB and MOs needs to be improved	• Created a PQAO List Serve to notify air monitoring personnel of important updates • Working with the California Air Pollution Control Officers Association (CAPCOA) on enhancing air monitoring operations through the air monitoring managers committee • Hold monthly QA conference calls with PQAO MOs

2. Background

The U.S. Environmental Protection Agency (EPA) conducted a Technical System Audit (TSA) in 2011 of the California Air Resources Board (CARB) and three Monitoring Organizations (MOs) within CARB's Primary Quality Assurance Organization. The three MOs included in the TSA were the San Joaquin Valley Air Pollution Control District (SJVAPCD), Imperial County Air Pollution Control District (ICAPCD) and Mendocino County Air Quality Management District (MeCAQMD). SJVAPCD was chosen for review as it is the largest MO in the CARB PQAO and has the most significant air quality issues. ICAPCD and MeCAQMD were chosen as examples of medium and small size MOs, respectively. EPA reviewed the overall ambient air monitoring programs and issued a report identifying areas of possible improvement on October 22, 2012.

A TSA is an on-site review and inspection of ambient air monitoring programs to assess its compliance with established regulations governing the collection, analysis, validation, and reporting of ambient air quality data. It is part of an oversight system by which EPA ensures that data collected by MOs meet certain minimum data quality objectives. The TSA conducted by EPA meets the requirements for its audits of CARB's monitoring organization as described in 40 CFR Part 58, Appendix A, Section 2.5. The TSA covered the areas of network management, field operations, laboratory operations, data and data management, and quality assurance. Below is a description of these elements.

Network Management - Assessment of the network design, changes to the network since the last audit, and an evaluation of planned and proposed changes to the network.

Field operations - Includes a thorough review of air monitoring station operations (siting, documentation, calibrations, quality control, data validation, etc.) and the program's support systems (instrument testing, certification, and repair).

Laboratory Operations - Assessment of the toxics and particulate matter analytical programs. Areas reviewed include quality control, preventive maintenance, record keeping, and data acquisition and handling.

Data and Data Management – Assessment of the data management process, including data verification, data validation, and documentation.

Quality Assurance - Includes a review of the entire QA program; including documentation, audits, quality control, independence of quality management functions, and data validation.

3. Findings

CARB is the agency delegated under State law with the authority and responsibility for collecting ambient air quality data as directed by the Clean Air Act of 1977, and the Clean Air Act Amendments of 1990. As stated in the Federal Code of Regulations (CFR), EPA has defined CARB as the PQAO for all of California, with the exception of the Bay Area Air Quality Management District, the South Coast Air Quality Management District, and the San Diego County Air Pollution Control District.

Federal regulations (40 CFR Part 50 Appendix A Section 3) require that each ambient air monitoring PQAO conform to certain quality management practices. These include:

- Having a documented quality system that meets EPA requirements for Quality Management Plans (QMP) and Quality Assurance Project Plans (QAPP).
- Having a quality management function that is independent of air monitoring operations.
- Developing or adopting data quality objectives (DQO), or equivalent systematic planning procedures, for all monitoring programs.
- Participating in National Performance Evaluation Programs, which consist of performance audits used to independently determine program adequacy, national monitoring network performance, and national consistency.
- Undergoing TSAs by EPA at a frequency of every three years or less as needed.
- Using certified reference materials to standardize monitoring equipment.

EPA views these quality management system components as indispensable to maintain a credible monitoring program. Insufficient quality management and control has been cited as rationale to support legal challenges to the National Ambient Air Quality Standards designation decisions.

CARB oversees the quality assurance of data collected by MOs within the CARB PQAO. Of the 35 MOs in California, 21 collect ambient air monitoring data and are considered part of the CARB PQAO. Although both CARB and MOs operate ambient monitoring stations throughout the State, responsibility for ambient air monitoring ultimately rests with CARB. Furthermore, it is the responsibility of CARB to provide QA oversight to ensure that data quality within the CARB PQAO meets CFR requirements and conforms to quality standards approved in the QAPP. The TSA assessment conducted by EPA identified several key findings for the CARB ambient air monitoring program. The key findings included:

1. Need to formalize the structure of the CARB PQAO

   CARB needs to complete the process of putting a formal PQAO into place. This includes defining the roles and responsibilities of both CARB and MOs, development of a comprehensive training program, use of standardized quality system documents, and enhanced communication between all MOs. It also includes addressing the need to have sufficient staff to manage QA oversight of the

PQAO MOs. QA oversight includes formalizing the authority of the Quality Management Chief as the primary QA contact for PQAO MOs, developing the necessary organizational structure and staff expertise, establishing CARB staff responsibilities for overseeing QA activities within the CARB PQAO, conducting TSAs of MOs, and developing network planning and data validation tools for use by CARB and MOs.

Response - CARB has hired temporary staff who have begun the process of generating or revising documents to formalize CARB quality management policies, defining roles and responsibilities of CARB and MOs, assessing the current status and needs of the PQAO with respect to QA activities and documents, developing a comprehensive training plan, establishing procedures for QA communication and assistance (PQAO List Serve), and implementing a corrective action documentation process. CARB has also reallocated resources to support PQAO activities and provide QA support and oversight. The Quality Management Chief has been designated as the primary QA contact for the PQAO, and this authority is being formalized in the QMP and PQAO Roles and Responsibilities document.

2. Lack of approved/adopted quality system documents

CARB needs to make progress on updating the CARB QA Manual with a QMP and QAPP or equivalent documents, the process is behind schedule.

Response - CARB has taken steps to address this issue through an ongoing revision of the QMP and QAPP, establishing a review and revision schedule for quality management documents, assessing the current status of QA practices and procedures performed by MOs, developing a repository of approved PQAO quality management documents, and continuing to review quality management documents as part of the CARB TSA process. In addition, CARB is in the process of determining the status of quality management documents used by MOs within the PQAO, and to ensure that documents are current and readily accessible to all MOs. A QA activities survey was sent to MOs requesting them to list all quality management documents in use. Survey results will be reviewed by CARB and MOs will be contacted as necessary to develop action plans for the update and implementation of quality management documents. The survey will be conducted every two years to ensure quality management documents are being updated on a regular schedule. CARB is developing a repository table of CARB PQAO approved quality management documents that will be available on the PQAO website. CARB will be working closely with MOs to either develop their own quality systems documents or adopt CARB's. CARB will continue to review MO quality management documents as part of the CARB TSA process.

3. Unsatisfactory network management: network plans, network assessments, site closures, and data certification, have been inconsistently managed across air MOs in California.

   Not all MOs within the CARB PQAO have an approved network plan. The current approach to network plans does not provide for a determination of network adequacy on a statewide basis. Of the 21 MOs that collect ambient air monitoring data under the CARB PQAO, 9 prepared and submitted their own annual monitoring plan. CARB's plan included the remaining MOs plans. In addition, there are numerous deficiencies in the data certification process for the CARB PQAO. Several MOs collect, analyze, and submit regulatory ambient air monitoring data. Often the same MO does not perform all of these activities and so it is not clear which MO should certify the data. CARB should establish a formal structure for data certification. CARB and MOs should establish formal roles and responsibilities so that no unvalidated data are certified and entered into AQS.

   Response - CARB will summarize information from the MO's network plans in summary tables annually and review them to ensure that the required elements of 40 CFR 58.10 are met on a statewide basis. If deficiencies are found, CARB will coordinate with MOs to address the issues. Finally, CARB will continue to include any MO in the CARB network plan that does not intend to prepare their own. This information is obtained from a query of PQAO MOs that staff conducts each year. CARB is also developing a roles and responsibilities document that will formalize the data certification process. CARB will host conference calls with MOs and EPA to discuss the process and undertake a coordination role to ensure MOs have the required AQS authority to certify their data in a timely manner. CARB will continue to certify data for the 10 MOs for which it is the data submitter, and will institute procedures to improve data validation and review. Finally, CARB will work with EPA staff to clarify responsibilities for certification of MO PM2.5 data that are analyzed per federal grant agreements.

4. Data validation; lack of coordination and training has resulted in inadequate and inconsistent data validation

   Data within the CARB PQAO are not validated using consistent procedures. Each MO within the CARB PQAO is expected to validate its own data; however, this is not done consistently. EPA identified incorrect data being collected by MOs and submitted to the national air quality system database. In order to maintain a consistent data set, a PQAO should have a standard for routine data validation. However, the CARB QA Manual does not require a specific validation scheme for each of the criteria pollutants. CARB and MOs should establish SOPs for data validation. They should establish formal documentation that outlines roles and responsibilities for data review and submittal. All CARB PQAO MOs should receive data validation training. CARB should also develop tools to conduct effective and efficient data audits.

Response - CARB and MOs are taking several steps to address the issue of data validation. The roles and responsibilities for data validation will be formalized and MOs within the CARB PQAO will be required to adopt data validation procedures developed by CARB or develop their own procedures that are approved by CARB. Additionally, CARB and MOs are incorporating upgrades to the monitoring and data management hardware and software to allow for more effective review, editing, and reporting of data. CARB will be providing a comprehensive air monitoring training program that will include data review and validation procedures. CARB is also in the process of developing a comprehensive data audit program using statistical analysis tools.

5. Inconsistent field operations

Field sites are operated inconsistently at both CARB and non-CARB sites throughout the PQAO. The level and consistency of documentation at field stations was inadequate to reconstruct the monitoring that was conducted and to resolve definitively the data quality issues identified. Field documentation should be improved and a process developed and implemented to provide defensible electronic documentation.

Response - CARB and MOs included in the TSA have and will continue to implement procedures to improve the documentation of the daily operations, maintenance, and QC checks performed at the monitoring sites. Procedures will include guidance for accurate and complete documentation, training on new or revised procedures, reduction of data lost due to non-operational equipment or invalid samples, and the routine calculation and posting of residence times for gaseous pollutant monitors. CARB and MOs are in the process of implementing improved electronic record keeping systems. CARB will also be providing a comprehensive air monitoring training program that will include field operations, quality control, data validation, and documentation.

6. Coordination between CARB and MOs needs to be improved

CARB and MOs must take ownership of the data quality and work together to develop processes to avoid the recurrence of problems. CARB should develop a process to routinely share information with MOs (e.g., PQAO List Serve). CARB and MOs should create a mechanism for resolving issues in a well-documented and transparent manner and articulate clear expectations of roles and responsibilities.

Response - CARB is taking several steps to improve communication and coordination between CARB, MOs, and EPA. Specifically, CARB has created a PQAO List Serve and contact list to better disseminate information, activities, updates, and issues. CARB is in the process of developing a PQAO roles and responsibilities document to formalize the tasks of each MO. In addition, CARB actively participates in monthly conference calls to discuss PQAO issues.

EPA identified each specific finding in a separate form to help track the corrective actions and timelines. The Corrective Action Form includes the finding, a description of the issue, the actions taken or planned by CARB or MO to correct the finding, an implementation timetable, and a point-of-contact for each of the corrective actions. In addition, CARB summarized the corrective action responses in a spreadsheet (see Attachment A) for easy reference and tracking of the corrective action status. The individual Corrective Action Forms are included in Attachment B.

4. Conclusions

EPA's TSA identified several areas of the CARB PQAO ambient air monitoring program that could be improved to enhance the overall quality of the monitoring program. Overall, CARB agrees with EPA's findings and is committed to addressing the concerns and issues identified. CARB has already taken many steps, including the creation of a new section and the hiring of temporary staff, to ensure that the CARB PQAO meets the federally mandated requirements.

ATTACHMENT A

(TSA Summary Spreadsheet)

Corrective Action Plan - Summary

Date(s) of Audit: **June - September, 2011**
Audited Agency: **California Air Resources Board**
Auditing Agency: **United States Environmental Protection Agency - Region 9**

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
G1	The California Air Resources Board needs to complete the process of putting a formal Primary Quality Assurance Organization into place.	The California Air Resources Board has undergone a re-organization within the Quality Management Branch to create a new section, hire additional staff, and reallocate resources to support Primary Quality Assurance Organization activities. The California Air Resources Board has also generated or revised documents to formalize California Air Resources Board policies, define roles and responsibilities of the California Air Resources Board and district monitoring organizations, and assess the current status and needs of the Primary Quality Assurance Organization with respect to quality assurance activities and documents.	• Reorg/hire new staff - Completed • Provide quality assurance support and oversight - ongoing • Revise quality assurance documents - June 2013 • Formalizing roles and responsibilities - March 2013	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
G2	The Quality Management Branch does not have the structure and staff to manage quality assurance oversight of the Primary Quality Assurance Organization districts.	The newly created Quality Management Section has dedicated staff responsible for acting as liaisons to Primary Quality Assurance Organization districts and providing quality assurance support and oversight. California Air Resources Board is also in the process of developing documents to formalize the policies, define the roles and responsibilities, and determine the status of the quality assurance activities and documents of agencies in the Primary Quality Assurance Organization.	• Final Quality Management Plan - June 2013 • Formalizing roles and responsibilities - March 2013 • The Quality Assurance Activities Survey was distributed to Districts in September and the California Air Resources Board expects to receive all responses by end of January 2013.	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
G3	While progress has been made on updating the California Air Resources Board Quality Assurance Manual with a Quality Management Plan and Quality Assurance Project Plans or equivalent documents, the process is behind schedule.	The California Air Resources Board is developing its Quality Management Plan based on feedback received on the combined Quality Management Plan/Quality Assurance Project Plan submitted in August 2012. Quality management documents will be updated based on a schedule outlined in the Quality Management Plan and placed in a repository table on the Primary Quality Assurance Organization website.	• Final Quality Management Plan - June 2013 • Schedule for updating Quality Management documents will be established by the end of March 2013 and included in the final Quality Management Plan • Quality Management document repository table will be put online in 2013 and continually updated.	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
G4	Local districts within the California Air Resources Board Primary Quality Assurance Organization do not always have updated quality system documentation for all activities.	The California Air Resources Board is surveying districts to develop action plans for the update and implementation of quality management documents. The California Air Resources Board will generate document repository table on its Primary Quality Assurance Organization website and review these documents as part of the California Air Resources Board Technical System Audit process.	• Completed surveys are to be returned to the California Air Resources Board by end of January 2013. District action plans will be developed by the end of March 2013. • Repository table will be put online in 2013 and continually updated.	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960

Acronyms and Abbreviations: G - General, NM - Network Management, FO - Field Operations, DM - Data Management, QA - Quality Assurance, PM - Particulate Matter, TL- Toxics Lab, IMP - Imperial, MEN - Mendocino, SJV - San Joaquin Valley

Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
G5	Quality assurance authority and interactions between the Quality Management Branch and the other branches should be expanded and formalized. The corrective action system should be developed to include actions taken, in addition to reports issued by the quality assurance auditors and the calibration laboratory.	Quality assurance authority and interactions between the Quality Management Branch and the other branches will be expanded and formalized in the Quality Management Plan and other quality management documents. Also, the California Air Resources Board is implementing a Corrective Action Notification process.	• Final Quality Management Plan - June 2013 • Corrective Action Notification process - Completed • District document review - Ongoing	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
G6	Coordination between the California Air Resources Board and districts and the Environmental Protection Agency should be improved.	The California Air Resources Board has implemented and is in the process of implementing systems to improve communication and coordination between the California Air Resources Board, districts, and the Environmental Protection Agency, including; establishing a Primary Quality Assurance Organization listserve, creating a Primary Quality Assurance Organization contact list, conducting surveys of districts and participating in conference calls. The the California Air Resources Board is also working with districts to articulate the roles and responsibilities of all agencies in the Primary Quality Assurance Organization.	• Facilitate Primary Quality Assurance Organization calls - March 2013 • Corrective Action Notification process - Completed • Create Primary Quality Assurance Organization quality management document repository - March 2013 • Create Primary Quality Assurance Organization roles and responsibilities document - March 2013 • Conduct Primary Quality Assurance Organization training modules - Fall 2013	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
NM1	Not all agencies within the California Air Resources Board Primary Quality Assurance Organization have approved network plans since this became a requirement in 2006. The current approach to network plans does not provide for a determination of network adequacy on a statewide basis.	The Air Quality Analysis Section agrees to summarize information from districts' network plans in summary tables by October 1 of each year, and review them to ensure that the required elements of Title 40, Code of Federal Regulations Part 58.10 are met on a statewide basis. If deficiencies are found, then Air Quality Analysis Section staff will coordinate with districts to address the issues. Finally, Air Quality Analysis Section staff will continue to include any district in the California Air Resources Board network plan that does not intend to prepare their own plan.	October - 2013	Gayle Sweigert - Manager, Air Quality Analysis Section California Air Resources Board gsweiger@arb.ca.gov (916) 322-6923
NM2	The network assessment does not meet all Code of Federal Regulations requirements.	Air Resources Board staff in the Air Quality Analysis Section is currently working with Environmental Protection Agency Region 9 staff to implement a contract that would evaluate assessment tools and establish formats for required information. This would provide tools that districts and the California Air Resources Board could use in their network assessments, to facilitate Environmental Protection Agency review and provide network assesment information in a more consistent manner throughout the State.	• 2013: Contract (assuming Environmental Protection Agency funding) • 2015: Updated network assessments	Gayle Sweigert - Manager, Air Quality Analysis Section California Air Resources Board gsweiger@arb.ca.gov (916) 322-6923

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
NM3	There are Particulate Matter (PM10) monitors listed in local conditions (parameter code 85101), but not Standard Temperature and Pressure (parameter code 81102 in the Air Quality System), as required for Federal Reference Method/Federal Equivalent Method instruments.	The California Air Resources Board Particulate Matter (PM10) monitors will be upgraded to report standard temperature and pressure. New BX-965 report processor interfaces will be installed into the monitors to meet Air Quality System requirements. Upgrades to non-California Air Resources Board sites will be the responsibility of each individual district. The Quality Management Branch will coordinate communication with the Districts to get the data reporting corrected.	December 2012 – Start installation of report processor boards into Particulate Matter (PM10) Beta-Attenuation Mass Monitors; acceptance testing of said Beta-Attenuation Mass Monitor units Quarter 1, 2013 – Ship and set-up new Beta-Attenuation Mass Monitors to California Air Resources Board sites Quarter 2, 2013 – Start reporting Standard Temperature and Pressure	James Pham - Air Resources Engineer, Special Purpose Monitoring Section California Air Resources Board japham@arb.ca.gov (916) 327-4716
FO1	Documentation at the California Air Resources Board field sites is inadequate and not reviewed by management.	A technical bulletin will be issued to address the specific issues related to field documentation and implement a new data system that allows electronic record keeping. Future data management system procedures will address electronic tracking of instrumentation, site documentation and data validation.	• Technical Bulletin - March 2013 • Electronic record keeping - 2014	Norma Montez - Air Pollution Specialist, Air Monitoring North Section California Air Resources Board nmontez@arb.ca.gov (916) 327-4723
FO2	Management oversight of site operators needs strengthening.	California Air Resources Board management issued a document to staff dated April 17, 2012, outlining specific steps to be taken by field operators, specialists/engineers, and warehouse staff to minimize data loss. The document also covered how to improve communication, data review, logbook maintenance, instrument checks, etc.	Completed in April 2012	Joe Cruz - Air Pollution Specialist, Air Monitoring North Section California Air Resources Board jcruz@arb.ca.gov (916) 322-0243
FO3	California Air Resources Board field operators have not been trained on new standard operating procedures.	The California Air Resources Board's Quality Management Branch is developing training for current and new standard operating procedures. Staff have access to the Air Monitoring Web Manual and will be updated when changes are made to standard operating procedures on www.arb.ca.gov/airwebmanual.	The California Air Resources Board's Quality Management Section will start offering classes in Fall 2013.	Jamie Vandermast - Air Pollution Specialist, Air Monitoring North Section California Air Resources Board jvanderm@arb.ca.gov (916) 327-4717
FO4	Residence time calculations were not available at any California Air Resources Board site visited.	The residence time calculation should be performed annually or anytime a change to the sample system is implemented (change in the probe line, manifold, or analyzers). A residence time calculation spreadsheet has been developed and will be placed on the California Air Resources Board's Air Monitoring Web Manual and will also be emailed to staff. California Air Resources Board management will verify that residence time calculations have been performed for all sites by the end of June-2013.	• Place Spreadsheet on Web Manual - January 2013 • E-mail spreadsheet to staff - January 2013 • Revise Quality Assurance Manual - January 2013	Phil Wagner - Instrument Technician, Air Monitoring South Section California Air Resources Board pwagner@arb.ca.gov (805) 550-6929

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
FO5	Delay in sending Particulate Matter (PM2.5) samples has resulted in loss of data.	The filters now ship out weekly and ship overnight to avoid temperature flags. We no longer have any temperature flags. No filters have been invalidated due to temperature since the weekly overnight shipping process as was initiated.	Weekly and overnight shipment of filters began in May 2012.	Debbie Henson - Instrument Technician III, Air Monitoring South Section California Air Resources Board dhenson@arb.ca.gov (661) 334-3993
FO6	Particulate Matter make-up samples are not being taken in accordance with Environmental Protection Agency guidance.	The Northern and Southern Monitoring Sections of the California Air Resources Board will be notified of the preferred and alternative approaches recommended in the Environmental Protection Agency's "GUIDELINE ON DATA HANDLING CONVENTIONS FOR THE PM NAAQS" document for make-up samples. The pending draft Particulate Matter (PM10) standard operating procedures will be revised and the Environmental Protection Agency's "GUIDELINE ON DATA HANDLING CONVENTIONS FOR THE PM NAAQS" document will be provided to the Northern Laboratory PM Section so that they can include the appropriate pages of the document with the next quarterly shipment of filters.	• Issuance of Tech Bulletin-January 2013 • Particulate Matter (PM10) standard operating procedures revisions-January 2013 • Include copy of guidelines in 2nd Quarter filter mail out to operators – February/March 2013	Adolfo Garcia - Air Resources Engineer, Air Monitoring South Section California Air Resources Board agarcia@arb.ca.gov (626) 575-6701
FO7	Particulate Matter (PM10) quality control checks are not consistently recorded. There is no document in which field operators are directed to record this information.	The Volumetric Flow Controlled Particulate Matter (PM10) monthly check sheet available on our Air Monitoring Web Manual currently has a place to record flow verification readings. A memo will be issued reminding site operators to use the current check sheets available online.	The memo will be issued in January 2013.	Dustin Goto - Air Pollution Specialist, Air Monitoring North Section California Air Resources Board dgoto@arb.ca.gov (916) 327-4757
FO8	California Air Resources Board field staff do not check data after sending information to California Air Resources Board offices.	Update and reissue the Air Quality Surveillance Branch memo "Documenting Data Quality." Monthly data submittal memos will be forwarded to appropriate field staff. The California Air Resources Board will make appropriate changes to data validation procedures and or standard operating procedures to require that staff requesting changes to data previously submitted to the Air Quality System, seek appropriate air monitoring section manager approval for changes to the Air Quality System.	Update and reissue the Air Quality Surveillance Branch memo "Documenting Data Quality" – January 2013	Reggie Smith - Manager, Operations and Support Section California Air Resources Board rsmith@arb.ca.gov (916) 327-1238
FO9	The Yuba City site has several significant siting issues that need to be resolved.	Trees were trimmed to bring the station in compliance with the applicable requirements .	• The trees were trimmed - June 26, 2012 • Probe to be moved - by June 1, 2013	Glen Jennings - Air Pollution Specialist, Air Monitoring North Section California Air Resources Board gjenning@arb.ca.gov (916) 324-9748

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
FO10	Records indicate that calibrations of gaseous pollutant instruments are not consistently done according to a schedule.	A calibration data base is being established to better track calibration dates. Also being considered is a modification to the automatic nightly calibration procedures in order to be able to perform yearly calibrations instead of every 6-months.	• Review calibration dates and calibrate – Completed July 2012 • Calibration data base – May 2013	Fredrick L. Burriell - Air Resources Engineer, Air Monitoring South Section California Air Resources Board fburriel@arb.ca.gov (916) 327-0886
FO11	The number of nitrogen dioxide titration points taken during calibration does not meet regulatory requirements.	The number of Nitrogen dioxide titration points taken during a calibration will be raised to a minimum of three. Field Calibration worksheets and future oxides of nitrogen analyzer standard operating procedures will be amended to reflect this change. The three affected monitoring groups of the Air Quality Surveillance Branch will be notified via technical bulletin of the resolution to this finding.	• Issuance of Tech Bulletin - January 2013 • Calibration worksheet changes - January 2013 • Standard operating procedures revision – January 2013	Adolfo Garcia - Air Resources Engineer, Air Monitoring South Section California Air Resources Board agarcia@arb.ca.gov (626) 575-6701
FO12	Multi-point calibrations of Particulate Matter (PM2.5) instruments are not done routinely.	The Air Quality Surveillance Branch performs Particulate Matter (PM2.5) Federal Reference Method flow calibration procedures to each deployed sampler every six (6) months. For the Air Quality Surveillance Branch's Particulate Matter (PM2.5) sampler particulate monitoring standard operating procedures if the measured flow rate is greater than or less than 2% of the expected 16.67 litre per minute (<16.34 or >17.00 litre per minute) a multi-point calibration is then performed using the samplers firmware driven procedure.	Continue to calibrate per the Air Quality Surveillance Branch's standard operating procedures for Rupprecht & Patashnick Partisol 2000 and update Rupprecht & Patashnick Partisol 2025 standard operating procedures and calibration sheet to reflect multi-point calibration procedures January 2013.	Steve Aston - Air Resources Engineer, Special Purpose Monitoring Section California Air Resources Board saston@arb.ca.gov 916-327-4724
FO13	The Air Quality Surveillance Branch is not formally documenting the quality of zero air being used in the program.	Station operators are required to make daily, monthly and annual checks to ensure that the zero air scrubbers are operating within design parameters and supplying clean dilution air for nightly challenges. The California Air Resources Board quality control maintenance check sheet follows the manufacturer's recommendation for maintenance and service and provides adequate documentation for zero air scrubbers used in this capacity. The California Air Resources Board proposes to require the use of certified zero air standard cylinders as a dilution air source when performing semiannual calibrations. The Air Quality Surveillance Branch will also issue a memo to station operators, instrument calibrators and section managers of the change in California Air Resources Board policy.	Three months after receiving written approval from the Environmental Protection Agency: the California Air Resources Board will issue policy memo to affected California Air Resources Board personnel or modify applicable standard operating procedures.	Harlan Quan - Air Resources Engineer, Special Purpose Monitoring Section California Air Resources Board hquan@arb.ca.gov (916) 324-4121

Corrective Action Plan - Summary

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FO14	Span and precision gases used in the field are not being calibrated routinely.	Monitoring and Laboratory Division's Standards Laboratory is updating its cylinder certification program. ALL gas standards used by the Air Quality Surveillance Branch will be certified by the California Air Resources Board's Monitoring and Laboratory Divisions Standards Laboratory except for those gas standards that are unable to be certified by the Monitoring and Laboratory Division's Standards Laboratory (i.e. low level trace standards) which will be shipped to the respective vendor for periodic certification.	Implementation of Standards Laboratory updated cylinder certification program – July 2013	Reggie Smith - Manager, Operations and Support Section California Air Resources Board rsmith@arb.ca.gov (916) 327-1238
FO15	Instruments removed from the field are not always efficiently tracked and returned to the repair laboratory facility for diagnosis, repair, and reuse. Loss of data has occurred due to unavailability of spare instruments.	The California Air Resources Board's Operations and Support section currently maintains an equipment inventory tracking system. To facilitate the return of monitoring equipment for diagnostic and repair to the operations support section instrument laboratory, the Air Quality Surveillance Branch has implemented a branch policy "Minimizing Instrument Downtime and Improving Data Completeness" dated April 17, 2012.	COMPLETE – April 2012	Reggie Smith - Manager, Operations and Support Section California Air Resources Board rsmith@arb.ca.gov (916) 327-1238
DM1	The data validation and review/verification performed by the Air Quality Surveillance Branch, NLB, and Air Quality Analysis Section, are not formally published in control-copied standard operating procedures.	Update Section 2.0.2 of Volume II of our Quality Assurance Manual with information about our data validation and review/verification procedures. The updated document (previously updated in April 2000) will be uploaded here: http://www.arb.ca.gov/airwebmanual/vol2.php	February - 2013	Dustin Goto - Air Pollution Specialist, Air Monitoring North Section California Air Resources Board dgoto@arb.ca.gov (916) 327-4757
DM2	Data submitted by local districts within the California Air Resources Board Primary Quality Assurance Organization are not validated using consistent procedures. (See Findings SJV9, IMP10, and MEN11)	The California Air Resources Board is working with districts to articulate the roles and responsibilities of all agencies in the Primary Quality Assurance Organization, including responsibilities for data validation. Districts will also be responsible for following data validation procedures in quality management documents and attending Primary Quality Assurance Organization training.	• Formalizing roles and responsibilities - March 2013 • Primary Quality Assurance Organization training - Fall 2013	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
DM3	Air Quality Analysis Section does not ensure that local district data are validated prior to upload to the Air Quality System.	Air Quality Analysis Section staff will also host a conference call for interested districts to discuss any questions or issues related to the Air Quality System data submittal and validation on a quarterly basis, beginning in 2013. A post-submittal data review process is being incorporated in the Air Quality Analysis Section Data Management standard operating procedures, which includes producing graphs and summary tables using Discoverer and reviewing the data within five working days after submittal to the Air Quality System.	• 2013 (1st Quarter): Conference Call to Districts • Current: Post-Submittal Data Review Process • Formalizing roles and responsibilities - March 2013	Gayle Sweigert - Manager, Air Quality Analysis Section California Air Resources Board gsweiger@arb.ca.gov (916) 322-6923

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DM4	A few instances of erroneous continuous data were identified in the Air Quality System for California Air Resources Board sites.	The Air Quality Surveillance Branch will update and reissue its existing memo "DOCUMENTING DATA QUALITY" and ensure that ALL staff and managers are following its guidelines. The Air Quality Surveillance Branch will also assign a person in each air monitoring section with the task of conducting data audits, use data visualization tools and automatic quality control functions of the new Data Management System to enhance data reviews and develop and, in conjunction with the Quality Management Branch, implement a comprehensive Primary Quality Assurance Organization training program.	• Update and reissue the Air Quality Surveillance Branch memo "Documenting Data Quality" – January 2013 • Assign staff to conduct Air Quality Surveillance Branch data audits – March 2013 • Begin using data visualization tools – July 2013 • Begin comprehensive Primary Quality Assurance Organization training program – Fall 2013	Reggie Smith - Manager, Operations and Support Section California Air Resources Board rsmith@arb.ca.gov (916) 327-1238
DM5	Erroneous continuous data were identified in the Air Quality System for non-California Air Resources Board sites within the California Air Resources Board Primary Quality Assurance Organization.	Monitoring and Laboratory Division is planning to conduct a formal Primary Quality Assurance Organization training for the districts within the California Air Resources Board Primary Quality Assurance Organization and Air Quality Analysis Section staff will attend the relevant portions of this training. Moreover, districts will be required to use the California Air Resources Board's data validation procedures, unless districts have alternative procedures that have been approved in their Quality Management Plan and/or relevant standard operating procedures.	Primary Quality Assurance Organization training scheduled to begin fall 2013.	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
DM6	There are numerous deficiencies in the data certification process for the California Air Resources Board Primary Quality Assurance Organization, including: • Not all National Ambient Air Quality Standards-compliant data within the California Air Resources Board Primary Quality Assurance Organization are routinely certified. • Data certified by the California Air Resources Board for local districts are not typically reviewed or validated. • Data are routinely certified by agencies within the State of California, but responsibility has not been formally delegated to any local agencies within the State of California.	The roles and responsibilities document between the California Air Resources Board and the districts within the Primary Quality Assurance Organization will identify the responsibilities of the districts in certifying their own data if they are direct data submitters. The California Air Resources Board will work with districts to ensure that they understand their responsibilities for data certification. For the ten districts for which the California Air Resources Board is the data submitter, the California Air Resources Board will institute steps to improve data validation and review procedures as noted in DM2 and DM3. Finally, Monitoring and Laboratory Division will work with the Environmental Protection Agency Region 9 staff to further clarify San Diego and Ventura grant responsibilities for the certification of district Particulate Matter (PM2.5) data that they analyze per contract agreement.	• March 2013: Conference call with districts regarding data certification • May 2013: Annual data certification • Formalizing roles and responsibilities - March 2013 • Primary Quality Assurance Organization training scheduled to begin fall 2013	Gayle Sweigert - Manager, Air Quality Analysis Section California Air Resources Board gsweiger@arb.ca.gov (916) 322-6923

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DM7	Data, including those used for design value sites, have been changed after they are certified and subsequently not recertified.	Air Quality Analysis Section commits to update data certification annually each May (with our certification letter) and the Air Quality Data Branch will conduct a comprehensive review of data certification status prior to any upcoming regulatory finding and recertify data, as needed. Also, the document describing the roles and responsibilities of agencies comprising the California Air Resources Board Primary Quality Assurance Organization will provide districts with a greater understanding of their responsibilities regarding data certification.	• May 2013: Data Certification letter, including recertification of past years data • Ongoing: recertification as needed to support specific regulatory actions • Formalizing roles and responsibilities - March 2013	Gayle Sweigert - Manager, Air Quality Analysis Section California Air Resources Board gsweiger@arb.ca.gov (916) 322-6923
DM8	Some local districts within the California Air Resources Board Primary Quality Assurance Organization are listed as Primary Quality Assurance Organizations in the Air Quality System.	In November 2012, the California Air Resources Board reviewed the list of districts specified in this finding, DM8, in the Air Quality System and determined that Great Basin, San Joaquin, and Siskiyou correctly identified the California Air Resources Board as the Primary Quality Assurance Organization. Mendocino, Santa Barbara, and Tehama had incorrect Primary Quality Assurance Organization designations. The California Air Resources Board will contact each district identified and request appropriate update in the Air Quality System to reflect correct Primary Quality Assurance Organization designation.	The California Air Resources Board will contact each District identified above in December 2012, and request that specified corrections be made to their Primary Quality Assurance Organization designation in the Air Quality System. The California Air Resources Board will work with identified Districts and the Environmental Protection Agency to ensure corrections are made in a timely manner.	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
DM9	There were several instances of the California Air Resources Board altering data collected by local districts without communicating with the district.	Finding is being addressed in the Air Quality Analysis Section Data Management standard operating procedures. It is the Air Quality Analysis Section policy that no data in the Air Quality System database be changed or modified in any way without the consent of the district. Quarterly conference calls with districts for which Air Quality Analysis Section staff is the data submitter would be another forum to follow-up on any data problems.	Monthly meetings with Air Quality Analysis Section staff responsible for data input (ongoing)	Gayle Sweigert - Manager, Air Quality Analysis Section California Air Resources Board gsweiger@arb.ca.gov (916) 322-6923
QA1	The quality assurance audit group has made an effort to improve its documentation process; however, several inconsistencies were noted.	Logbooks are kept for the Quality Assurance Section audit vehicles and instruments. Logbook entries are completed in indelible ink and initialed by the responsible staff member as maintenance is completed or changes are made and periodically reviewed by management. Further, all field audit worksheets are completed on site using indelible ink and then transferred by the onsite audit team to electronic documents and verified by staff of the Quality Assurance Section prior to inclusion in the permanent audit file.	Immediate and on going	Ranjit Bhullar - Manager, Quality Assurance Section California Air Resources Board rbhullar@arb.ca.gov (916) 322-0223

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QA2	The audit trailer evaluated was using one expired gas cylinder along with others that had not been certified annually as required for the Environmental Protection Agency National Performance Audit Program.	The Quality Assurance Section has designated a certified back-up for low and high carbon monoxide, as well as superblend cylinders. These back-up cylinders will be certified concurrently with the cylinders used to conduct audits. South Coast Air Quality Management District has offered a backup certified cylinder to the Quality Assurance Section if necessary. The Quality Assurance Section now only purchases gas cylinders prepared using Environmental Protection Agency protocol; these mixtures are analyzed in accordance with "EPA traceability Protocol for Assay and Certification of Gaseous Calibration Standards".	• Certified backup cylinders – Annually • Environmental Protection Agency Protocol gas cylinder – Implemented 1/2012 • South Coast Cylinders – Available as needed All of the corrective action items listed above have been implemented by the Quality Assurance Section as of January, 2012.	Leena Janda - Air Pollution Specialist, Quality Assurance Section California Air Resources Board Hjanda@arb.ca.gov (916) 323-1439
QA3	The Quality Assurance Section is not tracking monitors to ensure that 25% are being audited per calendar quarter.	The Quality Assurance Section will continue to pre-schedule State and Local Air Monitoring Stations gaseous analyzer performance evaluations prior to each calendar year. The Quality Assurance Section will evaluate the schedule to ensure that for each calendar quarter, it schedules at least 25 percent of State and Local Air Monitoring Stations operational gaseous analyzers. Due to the existence of multiple gas analyzers at some monitoring stations the Quality Assurance Section will prioritize the quarterly schedule of gaseous criteria pollutants in the following descending order: ozone, nitrogen dioxide, carbon monoxide and sulphur dioxide.	Immediate and on going	Chris Deidrick- Air Pollution Specialist, Quality Assurance Section California Air Resources Board cdeidric@arb.ca.gov (916) 322-8919
QA4	The connection to the inlet on the audit trailer could pull in outdoor air.	The Quality Assurance Section has implemented a procedure to verify that during initial hook up and prior to disconnecting, there is greater than 1 liter per minute (lpm) flow through the bypass of the glass tee. The flow is measured with a rotometer and recorded on the Quality Assurance Audit Worksheet Monitoring and Laboratory Division/Quality Assurance Section-013 (Revision 6/5/12). The possibility of air mixing is eliminated when positive flow through the bypass vent is noted both before and after each audit.	Completed	Laura Niles - Air Pollution Specialist, Quality Assurance Section California Air Resources Board lniles@arb.ca.gov (916) 322-9192
QA5	Auditors do not review all applicable siting information in the Air Quality System prior to an audit.	Prior to a performance audit, the Air Quality System staff contacts the site agency to inquire if the site information contained in the Air Quality System is accurate and up-to-date. During audits, Quality Assurance Section staff compares the actual site information including Global Positioning System coordinates, to the information contained in the Air Quality System. Discrepancies are noted on the quality assurance audit worksheet and included in the comment section of the permanent audit report and the appropriate agency is advised to make changes to the Air Quality System.	Completed	LaMar Mitchell- Air Pollution Specialist, Quality Assurance Section California Air Resources Board lmitchel@arb.ca.gov (916) 445-9371

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QA6	Quality assurance for special projects is not developed in a process consistent with Environmental Protection Agency quality system requirements.	The California Air Resources Board will include a policy statement in the Quality Management Plan to ensure that special projects include the necessary quality assurance elements to ensure that data are suitable for their intended use. The California Air Resources Board plans to make quality assurance a standing agenda item at various forums (i.e., California Air Pollution Control Officers Association Air Monitoring Meeting, Quality Assurance Conference Call, Air Monitoring Technical Advisory Committee, training) to determine what special projects agencies are planning and that essential quality assurance practices are included (see Corrective Action Form - Finding Number G6 for additional forums of communication).	• Corrective Action Notification process - Completed • Finalize Quality Management Plan - June 2013 • Communication outreach - Ongoing	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
QA7	Mass flow elements (MFEs) are used to establish calibration points outside of their calibrated range.	Standards Laboratory has purchased and employed a Molbloc-s (Sonic Nozzle) flow standard to address this issue. The calibration points can now be checked down to 0.1 standard liters per minute.	Completed - March 2012	Robert Russell - Air Pollution Specialist, Data Analysis and Special Projects Section California Air Resources Board rrussell@arb.ca.gov 916-322-0216
PM1	Communication of post-weigh information and transmission of documentation to local districts should be improved.	The California Air Resources Board has addressed the finding by: implementing a tracking system for trip blanks, creating a program which automatically emails a list of filters that have been sampled greater than 10 days past and have not been received into the laboratory to management, implementing a 45 day turn-around-time (which the monthly report review/approval process is included in), contacting site operators directly when issues arise and initiating the Corrective Action Notification program to track systematic network problems.	Completed	Michael Werst - Manager, Inorganic Laboratory Section California Air Resources Board mwerst@arb.ca.gov (916) 322-6202
PM2	The Particulate Matter laboratory does not have a formal corrective action process for addressing issues with Particulate Matter filter collection.	The California Air Resources Board has addressed the finding by: creating a program which automatically emails a list of filters that have been sampled greater than 10 days past and have not been received into the laboratory, creating a 'Sample Handling Improvement Team', contacting site operators directly when issues arise, and initiating a Corrective Action Notification process.	Completed	Michael Werst - Manager, Inorganic Laboratory Section California Air Resources Board mwerst@arb.ca.gov (916) 322-6202

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PM3	Documentation of activities in the Particulate Matter (PM10 and PM2.5) laboratories should be improved.	The California Air Resources Board has addressed the finding by: replacing electrostatic strips annually and recording replacement dates, noting post-weigh conditioning times on the chain of custody form, installing a real-time web-based temperature/RH sensor, recording temperature/relative humidity fluctuations in laboratory logbooks, recording the temperature of the refrigerator in which filters are stored on a weekly basis, documenting verified mass values on chain of custody forms of a filter is removed from cold storage and formally documenting changes and calibration records in a logbook in the Particulate Matter (PM10) lab.	Completed	Michael Werst - Manager, Inorganic Laboratory Section California Air Resources Board mwerst@arb.ca.gov (916) 322-6202
PM4	Particulate Matter (PM10) trip blanks are not being used to assess potential bias from filter transport and handling.	The California Air Resources Board will provide trip blanks for each Particulate Matter (PM10) air monitoring station. Each Particulate Matter (PM10) site will receive one trip blank per year; the trip blanks will be sent to 25% of the Particulate Matter (PM10) air monitoring stations each quarter.	Trip blanks will be provided by second quarter 2013. Evaluation will occur after one year.	Michael Werst - Manager, Inorganic Laboratory Section California Air Resources Board mwerst@arb.ca.gov (916) 322-6202
TL1	The canister cleaning standard operating procedures do not reflect the current cleaning procedure.	New standard operating procedures are being written to address the procedures for canister cleaning with the new Toxic Organic (TO)-Clean system.	Amend current standard operating procedures or create new standard operating procedures for Toxic Organic (TO)-Clean system. Submit draft - January 31, 2013.	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288
TL2	Standard operating procedures are not documented for the batch certification of cleaned canisters. The canister cleaning standard operating procedures lists cleaning criteria for the Monitoring and Laboratory Division 058 method, but not for the Monitoring and Laboratory Division 066 method.	The canister cleaning standard operating procedures will be amended to include procedures and criteria for certifying clean canisters. The criteria for each method were previously based on reporting limits for each compound.	Amend canister cleaning standard operating procedures and submit draft - January 31, 2013.	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288
TL3	The batch certification of cleaned canisters described by staff for methods Monitoring and Laboratory Division 058 and Monitoring and Laboratory Division 066 differs from existing volatile organic compound guidance.	The California Air Resources Board will continue to test one in twelve canisters cleaned. Tests have been conducted to show this is sufficient. One in twelve is consistent with the planned revisions to the the Environmental Protection Agency National Air Toxics Trends Stations program.	None	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288

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TL4	Pre-cleaning concentrations are not recorded in a logbook to allow for the selection of the most highly contaminated canister for batch certification.	The California Air Resources Board will prioritize any canisters with high concentrations for use as batch certification. Otherwise will continue selecting random cans for certification, choosing first the ones that have not previously been used for batch certification. This procedure will be documented in the standard operating procedures.	Include in amended standard operating procedures and submit draft - January 31, 2013.	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288
TL5	Canisters are not routinely leak tested as prescribed in guidance. Instead, canisters are vacuum leak tested only when gross leaks are suspected.	The California Air Resources Board will continue to monitor all cans held at vacuum when cleaned and further test for leaks if the vacuum fails to hold constant while waiting to be sent out for sampling. Pressure readings are recorded at various times in lab and field. If pressure does not remain constant, canisters are not shipped and are checked for leaks then repaired or disposed.	Amend standard operating procedures and submit draft - January 31, 2013	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288
TL6	A retention time policy for re-cleaning and blanking canisters once they have been certified clean has not been established.	The California Air Resources Board will track canister cleaning dates and rotate canisters for sampling appropriately to ensure they are used in a timely manner. If a canister has not been used within four weeks of cleaning it will be tested for cleanliness.	Amend standard operating procedures and submit draft - January 31, 2013	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288
TL7	The California Air Resources Board standard operating procedures state that old canisters are reconditioned, but this is inconsistently practiced.	Remove section on reconditioning from standard operating procedures.	Amend standard operating procedures and submit draft - January 31, 2013	Judy Hodgkins - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board jhodgkin@arb.ca.gov (916) 323-4288
TL8	The California Air Resources Board has not established a holding time for cartridges once samples have been collected for extraction or analysis.	A team has been formed to address shipping and receiving sampling media and samples. The Organic Laboratory Section will work with the Air Quality Surveillance Branch and districts to have cartridges retrieved and shipped to the laboratory in a timely manner in order to get samples extracted within the expected 14 day hold time. Field protocols will be amended with regard to cold storage and holding times for cartridge use.	Work with the Air Quality Surveillance Branch to amend field protocols and submit draft - February 28, 2013.	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL9	The laboratory does not assign expiration dates to new sampling cartridges and allows cartridges to be used beyond the 90 days prescribed by the method.	A change in the standard operating procedures to verify cartridge lot recertification at 90 days and longer will be put into place. Tracking cartridges is being done to ensure cartridges are not held in the field or used past 90 days.	Amend standard operating procedures and submit draft - February 28, 2013	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337

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TL10	The California Air Resources Board's procedure for analyzing Dinitrophenylhydrazine lot blanks differs from the standard operating procedures.	The current standard operating procedures are being updated to conform to current practices.	Amend standard operating procedures and submit draft - February 28, 2013	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL11	No criterion is provided in the California Air Resources Board standard operating procedures for passing Dinitrophenylhydrazine lot cartridge blanks.	The current standard operating procedures will be updated to include "Certificate of Analysis" that meets Determination of Toxic Organic Compounds in Ambient Air Method TO-11A criteria for cartridge blanks. The verification of cartridge lot and extraction set blanks will be tracked and reported to laboratory information management systems.	• Amend standard operating procedures and submit draft - February 28, 2013. • Amend laboratory information management systems following finalization of standard operating procedures.	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL12	Gloves are not worn as a contamination protection measure when handling cartridges. A nitrogen-purged glove bag is not used for extractions.	The handling of sample cartridges using gloves has always been the practice of the laboratory. The laboratory is a carbonyl free room with high ventilation and a brand new laboratory hood, which is kept in a high state of cleanliness. Laboratory extraction blanks are monitored for background contamination.	Completed	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL13	Staff stated that field blanks are not being analyzed at a frequency of 10% of field samples, as specified in Determination of Toxic Organic Compounds in Ambient Air Method TO-11, nor are there standard operating procedures describing the procedure for the submission of field blanks.	The current standard operating procedures are being updated to meet requirements of Determination of Toxic Organic Compounds in Ambient Air Method TO-11a regarding field blank samples. The laboratory is working with field sampling staff to meet the criteria of Determination of Toxic Organic Compounds in Ambient Air Method TO-11a requirements for National Air Toxics Trends Stations.	• Amend standard operating procedures and submit draft - February 28, 2013. • Notify field staff of field blank requirements and implement shipment and analysis of field blanks by after finalization of standard operating procedures.	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL14	The California Air Resources Board does not analyze trip blanks when needed.	The standard operating procedures will be updated to address trip blanks and field blanks to be collected and analyzed at a frequency of 10% as stated in Determination of Toxic Organic Compounds in Ambient Air Method TO-11a.	• Amend standard operating procedures and submit draft - February 28, 2013. • Notify field staff of trip blank requirements, and implement shipping and analysis of trip blanks once standard operating procedures are finalized.	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL15	Determination of Toxic Organic Compounds in Ambient Air Method TO-11 states that samples should be re-analyzed when results are 10% above the criterion, but the analyst was not aware of this criterion.	The current standard operating procedures are being updated to address this criteria. Samples with results that are above 10% of the calibrated curve will be diluted and reanalyzed. The laboratory has updated it procedures to include control charts that are current and accessible to chemists.	Amend standard operating procedures and submit draft - February 28, 2013	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
TL16	Working standards are tracked and used for six months, while the California Air Resources Board standard operating procedures state that standards should be retained for four months under refrigeration.	The standard operating procedures will be amended to reflect acceptable use lifetime of all stock standards and working standards used for Monitoring and Laboratory Division 022.	Amend standard operating procedures and submit draft - February 28, 2013	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL17	Site name and sampling dates are recorded on a piece of tape loosely stuck to sample cartridges; the tape occasionally falls off, making it difficult to identify samples.	Each cartridge has a tracking number printed on it that is referenced on the chain of custody form and the sampler data tape. The shipping logbook maintains a record of which cartridges are shipped and received. Volumetric flasks used during sample extraction have an etched identification number that is assigned to a cartridge identification number which are recorded in a logbook for cross reference. The verification procedures will be added to standard operating procedures.	Amend standard operating procedures and submit draft - February 28, 2013	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL19	There is no secondary review of logbooks.	Data is reviewed by way of a monthly report submitted to management. This report contains copies of all logbook pages added within the month for both laboratory work and instrument maintenance.	Completed	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337
TL20	The California Air Resources Board does not analyze audit samples or through-the-probe audit samples as suggested in Sec. 9.7 of the California Air Resources Board standard operating procedures.	The Quality Assurance Section of Monitoring and Laboratory Division performs an audits/ performance sample program annually to verify the accuracy of the sample handling and analysis procedures used for the volatile organic compound analysis (Monitoring and Laboratory Division-058). The California Air Resources Board is planning to participate in the Environmental Protection Agency National Air Toxics Trends Stations audit program for the volatile organic compound analysis in 2013. The California Air Resources Board no longer performs the through-the-probe performance audits for the volatile organic compound analysis. This section of the standard operating procedures will be removed in the next revision.	• Toxics Laboratory Audit program is already implemented and on-going. • The California Air Resources Board will participate in the National Air Toxics Trends Stations volatile organic compound audit program starting in 2013.	Mike Miguel - Chief, Quality Management Branch California Air Resources Board mmiguel@arb.ca.gov (916) 322-0960
TL21	Appendix V in the California Air Resources Board standard operating procedures list the standards that were used in 2003 and has not been updated to reflect the standards currently being used.	The standard operating procedures will be updated to remove reference to a specific standard. The standard operating procedures will state the process in which standards are obtained and expiration of working standards.	Amend standard operating procedures and submit draft - February 28, 2013	John Medina - Air Pollution Specialist, Organic Laboratory Section California Air Resources Board medinajo@arb.ca.gov (916) 327-2337

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
IMP1	The Imperial County Air Pollution Control District ambient air monitoring program is not operating under an approved Quality Assurance Project Plan.	A draft agency specific Quality Assurance Project Plan has been completed. The Air District will review the California Air Resources Board's draft Quality Management Plan when it becomes available. The possibility of formal adoption of California Air Resources Board Quality Management Plan and Quality Assurance Project Plan has not been discussed at this time but will be part of the final evaluation.	Draft version for review to the California Air Resources Board by March 2013. Draft version for review to the Environmental Protection Agency by end of May 2013. Final version summer 2013.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP2	Imperial County Air Pollution Control District has not established an appropriate quality system for ambient air monitoring.	Imperial County Air Pollution Control District is in process of developing a Quality Assurance Project Plan/Quality Management Plan. Imperial County Air Pollution Control District has reassigned duties and functions from the top managerial levels to the monitoring level assuring primary and secondary levels of review, corrective action and assurance that quality assurance/quality control is in line with Data Quality Objectives. Development and/or modification of the California Air Resources Board forms, standard operating procedures have been implemented and are currently in use by staff.	Procedures and forms have been instituted – a Draft Quality Assurance Project Plan/Quality Management Plan should be ready for the California Air Resources Board review by March 2013 and a Draft Quality Assurance Project Plan/Quality Management Plan should be ready for Environmental Protection Agency review by May 2013 with a Final by summer of 2013	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP3	Assessment of Particulate Matter (PM10 and PM2.5) sampling frequency throughout the Imperial County Air Pollution Control District network has not been performed as required.	Imperial County Air Pollution Control District has performed the assessment as required under Title 40, Code of Federal Regulations Part 28.12 (e) and 58.12 (d)(ii) and (iii). The analysis indicates both Calexico-Ethel and Brawley are required to do continuous monitoring.	Draft assessment finalized and ready for review November 2012 – Final assessment and submittal to the California Air Resources Board by December 2012. Anticipated final for the Environmental Protection Agency January 2013.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP4	Neighborhood scale may be inappropriate for Particulate Matter (PM10) at the Westmorland site.	The most recent Annual Network Plan identifies Westmorland station for Ozone as representative of a Regional Scale while for Particulate Matter (PM10) as representative of a Middle Scale. This information was provided to the California Air Resources Board (Primary Quality Assurance Organization) as a metadata update in the Air Quality System.	Submitted Metadata information for the Air Quality System on October 23, 2012 to the California Air Resources Board and included revision in the latest Annual Network Plan submitted to the Environmental Protection Agency for review.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
IMP5	One-point flow rate verifications for Particulate Matter (PM10 and PM2.5) are not performed by Imperial County Air Pollution Control District as required and are not well documented.	As of October 2012 the Imperial County Air Pollution Control District began flow audits of all Particulate Matter samplers within the Imperial County network. All flow rate verifications, certifications are recorded on standardized forms and kept at each station for recordkeeping purposes.	• Implemented internal flow audits as of October 2012. • Forms were updated and are part of quality assurance/quality control procedures now in place.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP6	Residence time for gaseous monitors operated by Imperial County Air Pollution Control District is not established.	The California Air Resources Board Monitoring and Laboratory Division staff provided the equations necessary for onsite technicians to conduct the necessary calculations. Imperial County Air Pollution Control District staff developed a spreadsheet to calculate the measurements. The California Air Resources Board calculates and verifies the residence time for each monitoring station as part of the annual through the probe audit.	Imperial County Air Pollution Control District trial entry of maintaining calculated recordings and tracking was on October 15, 2012. Imperial County Air Pollution Control District official entry of maintaining calculated recordings and tracking was today November 29, 2012.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP7	Imperial County Air Pollution Control District is internally post weighing high-volume Particulate Matter (PM10) filters without proper Particulate Matter lab or quality control measures.	Post weighing of Particulate Matter (PM10) filters has been discontinued.	June 2011 completed	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP8	Documentation of Imperial County Air Pollution Control District air monitoring activities is not complete.	Imperial County Air Pollution Control District has bound logbooks at each station which contain all day to day activities. Each station had has binders for each instrument.	Remedied August 2012.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
IMP9	There are potential siting issues at the Calexico Ethel site.	District and the California Air Resources Board are working to have the Calexico Ethel station moved north of the current location. In the interim, the California Air Resources Board has moved the two Particulate Matter (PM2.5) monitors to the rooftop.	• Moved Particulate Matter (PM2.5) monitors to roof top September/October of 2012. • Draft Letter of Intent sent by the Air District to the California Air Resources Board to assume operations of the relocated Calexico Station. • District/California Air Resources Board ongoing discussions on site operations.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
IMP10	Imperial County Air Pollution Control District is not adequately reviewing and editing data.	ESC/Agilaire 8832 dataloggers and Air vision software have been ordered to replace the existing Ecotech loggers/software. Installation and training has been set up with Agilaire staff for January 2013. California Air Pollution Control Officers Association Air Monitoring has recently announced a tentative training schedule for data validation which Imperial County Air Pollution Control District staff intend to take advantage of.	New data acquisition system, storage and processing to be installed January 22-25, 2013. Pending actual dates for data validation training.	Monica N. Soucier - Division Manager, Imperial County Air Pollution Control District monicasoucier@co.imperial.ca.us 760-482-4606
MEN1	Mendocino County Air Quality Management District staff was not familiar with the California Air Resources Board Quality Management Plan or instrument standard operating procedures.	California Air Resources Board monitoring web sites are bookmarked on District computers and standard operating procedures downloaded or accessed as needed for field work.	N/A	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN2	Mendocino County Air Quality Management District has been part of the California Air Resources Board Primary Quality Assurance Organization since Primary Quality Assurance Organizations were created in 2006 but is erroneously listed as its own Primary Quality Assurance Organization in the Air Quality System.	The California Air Resources Board has corrected the entry in the Air Quality System since the audit.	Completed	Pheng Lee - Air Pollution Specialist Air Quality Analysis Section California Air Resources Board plee@arb.ca.gov (916) 445-6059
MEN4	One-point quality control checks (flow verifications) for Particulate Matter (PM10 and PM2.5) are not consistently performed by Mendocino County Air Quality Management District site operators.	Mendocino County Air Quality Management District has made strides to ensure flow rate verifications have been conducted monthly on a more consistent basis. Re-alignment or rescheduling of some duties has allowed for flow verifications to be conducted each month so far during the current year.	Ongoing	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN5	The Mendocino County Air Quality Management District logbook entries are not consistently made and are not always in the most defensible form. Handwritten notes are occasionally illegible due to water (rain) marks.	Recently upgraded software is utilized to collect data from all remote stations and record/log information pertaining to the equipment being monitored. Logs are maintained at the remote sites to record specific information until replaced with a new yearly maintenance log, then information is archived in binders specific to the equipment. Efforts will be made to ensure the site logs remain as legible as possible given unpredictable weather conditions.	Ongoing	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354

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Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
MEN6	Residence time calculations were not available at the Ukiah Gobbi site.	Residence time was calculated and written in station log but not posted in view of the ozone monitor sampling piping. Residence time has been recalculated and posted on the wall near the sampling manifold	Completed	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN7	Trees at the Ukiah Gobbi and Library sites should be evaluated against siting requirements.	The trees near the Gobbi street monitoring site were cut down and removed by the property owner shortly after the Technical System Audit. City maintenance personnel have trimmed (and will attempt to keep trimmed) the lower branches closest to the monitor away from the roof line of the building at the Library Site.	Completed	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN8	The internal shelter thermostat is not operating correctly at the Ukiah Gobbi site and the issue has not been addressed to provide defensible data.	The trailer temperature monitoring probe, which is an independent device from the thermostat, delivers readings directly to the data collection software. Data collection software was adjusted to compensate for the difference. No manual adjustments are made, room thermostat is operating correctly and no data corrections are necessary.	N/A	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN9	The Mendocino County Air Quality Management District has no system for tracking and controlling station and instrument logbooks.	Please refer to response for Finding Men-5.	Ongoing	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN10	The Mendocino County Air Quality Management District should have formalized training requirements for all air monitoring staff.	District management and staff work together to complete the monitoring duties and conduct training as necessary. On-the-job training is performed by experienced District personnel for any new staff or new procedures implemented by the District. District staff also take advantage of the training opportunities provided by the California Air Resources Board and vendors, as resources and timing allows.	N/A	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
MEN11	The Mendocino County Air Quality Management District does not provide the California Air Resources Board's Air Quality Analysis Section with datasets that have been fully quality assured and ready for upload to the Air Quality System.	Upgraded reporting software supplies information directly to the California Air Resources Board in format ready for upload. Data is backed up and archived daily.	Software updated September, 2012.	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354

Corrective Action Plan - Summary

Finding Number	Finding Description	Agency Plan (Finding Response Summarized by California Air Resources Board Staff)	Approximate Date of Implementation	Contact for Corrective Action
MEN12	The Mendocino County Air Quality Management District does not use a formal corrective action system.	The District logs trouble-shooting information for specific instruments in the appropriate binder assigned to that instrument. The binders are being developed to include all pertinent information for the instrument including manuals, standard operating procedures and maintenance logs. The District will also consider adopting the California Air Resources Board's Corrective Action Notification process.	Ongoing	Robert Scaglione - Senior Air Quality Specialist Mendocino County Air Quality Management District mcaqmd@co.mendocino.ca.us 707-463-4354
SJV2	The San Joaquin Valley Air Pollution Control District does not have updated quality system documentation for all activities.	The District will adopt California Air Resources Board quality management documents that meet District needs, develop new quality management documents or amend California Air Resources Board quality management documents and develop Data Quality Objectives. The District plans to add senior staff to provide oversight and review of the project.	The adoption/updating/crafting of quality management documents is will be completed by the end of 4th quarter 2013.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV3	The San Joaquin Valley Air Pollution Control District has experienced significant data losses at required monitoring sites, including sites critical for demonstrating compliance with the National Ambient Air Quality Standards.	The District commits to minimizing data loss due to downtime for temporary closures and relocations by facilitating projects/activities to minimize the impact on data availability – including the evaluation of a temporary monitoring solution. The District commits to keeping the Environmental Protection Agency better informed of temporary site closures and relocations through written communications specific to the event.	Completed	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV4	The San Joaquin Valley Air Pollution Control District has initiated network modifications for several required sites without seeking Environmental Protection Agency approval required by Title 40, Code of Federal Regulations Part 58.14.	The District commits to formally seeking approval of network modifications by the Regional Administrator. The District commits to sending a formal letter to Regional Administrator upon temporary shutdown or relocation.	The District will implement this corrective action immediately upon approval from the Environmental Protection Agency.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV5	The residence time of flow between the inlet and each instrument was not posted at every San Joaquin Valley Air Pollution Control District site.	Residence time will be measured as prescribed by Title 40, Code of Federal Regulations Part 58 Appendix E Section 9 and recorded in the station log at each site, where applicable. Measurements will be re-established quarterly or more frequently as required by the applicable sections of Title 40, Code of Federal Regulations Part 58, Appendix E.	The District will implement this corrective action by the 1st quarter 2013.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950

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Corrective Action Plan - Summary

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SJV6	Some San Joaquin Valley Air Pollution Control District site logbooks lacked specific information about the date or type of maintenance performed on an instrument.	For the short term, District is updating documentation procedures and modifying current site logbooks and seeking additional training on proper logbook entries. For the long term, District has committed to updating its Data Acquisition System/Data Management System to address the use of electronic logbooks.	The District will implement its short term strategy by the end of the 2nd quarter 2013. However, the long term strategy completion dates will be based on the District's transition to the new Data Acquisition System/Data Management System and agreed to by the California Air Resources Board and Environmental Protection Agency.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV7	There is no documentation of management review of station logbooks and other site activities for San Joaquin Valley Air Pollution Control District operated sites.	For the short term, District will begin conducting manual reviews of station logbooks bi-annually. For the long term, District plants to implement upper level review of station logbooks and is evaluating the use of electronic logbooks as part of the upgrade to the Data Acquisition System/Data Management System.	The District has implemented its short term strategy. However, the long term strategy is a multiple year project; completion dates will need to be based on the District's transition to the new Data Acquisition System/Data Management System and agreed to by the California Air Resources Board and Environmental Protection Agency.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV8	San Joaquin Valley Air Pollution Control District site operators do not have a quick visual way to identify changes in instrument performance or quality control checks that would indicate instrument issues, nor do they have the ability to remotely check on data or site operations.	The District currently has systems in place that provide the station operators with the ability to remotely review instrument operations in real-time. The District is currently engaged in a pilot project to upgrade its Data Acquisition System/Data Management System.	This is a multiple year project; completion dates will need to be based on the District's transition to the new Data Acquisition System/Data Management System and agreed to by the California Air Resources Board and Environmental Protection Agency.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV9	The San Joaquin Valley Air Pollution Control District experiences data loss due to instrument malfunction.	The ongoing purchase and replacement of equipment at the air monitoring sites has improved the operational readiness and reliability of the network. Equipment deficiencies identified during the Technical System Audit had been resolved within six months of the Technical System Audit. Efforts to inform the Environmental Protection Agency of ongoing equipment needs and funding will become a greater part of the District's budget and network review process.	The District has implemented this corrective action, but will continue its effort to address these types of deficiencies.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV10	It is unclear whether the San Joaquin Valley Air Pollution Control District is using appropriate criteria to invalidate or flag Particulate Matter (PM10) data.	District is developing procedures that document or establish criteria for data validation or flagging. District's current standard operating procedures on data handling/review will need to be updated along with the establishment of other standard operating procedures the air monitoring program is lacking.	Update standard operating procedures - January 31, 2013	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950

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SJV11	The San Joaquin Valley Air Pollution Control District experiences significant resource inefficiencies for staff and management as the current data management system relies solely on manual inputs.	District is upgrading Data Acquisition System/Data Management System, which focuses on automating/streamlining data handling processes. Once deployed, the manual handling of data will be significantly decreased leaving more time for site operators to focus on maintenance/repair activities.	The target date for completion of this action is 4th quarter 2013 or sooner. The final date will be based on the District's transition to a new Data Acquisition System/Data Management System.	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950
SJV12	The San Joaquin Valley Air Pollution Control District does not have a formal corrective action process in place.	The District commits to develop formal corrective action process standard operating procedures and will consult with the California Air Resources Board. District's new Data Acquisition System/Data Management System will play a role in these standard operating procedures, so development/revision of these standard operating procedures will need to be tied to the transition of the new system	Update standard operating procedures - February 28, 2013	Morgan Lambert - Director of Compliance, San Joaquin Valley Air Pollution Control District Morgan.Lambert@valleyair.org (559) 230-5950

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ATTACHMENT B

(TSA Corrective Action Forms)

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: General 1

Finding:
[Previous Finding Major Finding 1] California Air Resources Board needs to complete the process of putting a formal Primary Quality Assurance Organization into place.
Description of the Problem:
California Air Resources Board has taken steps to strengthen the California Air Resources Board Primary Quality Assurance Organization by: • Appointing a Primary Quality Assurance Organization contact. • Improving the field audit and technical audit program of Primary Quality Assurance Organization districts. • Beginning to provide quality assurance training. • Reviewing Primary Quality Assurance Organization districts' quality control data prior to routine data certifications. • Beginning to review Primary Quality Assurance Organization districts' standard operating procedures. • Starting a process to put in place agreements with Primary Quality Assurance Organization districts. • Evaluating and controlling the standards used by the Primary Quality Assurance Organization through the standards laboratory and during technical audits. The California Air Resources Board Primary Quality Assurance Organization is able to produce data of known quality that can withstand legal and technical challenges to state and Federal regulatory decisions. In order to complete the process of integrating California Air Resources Board Primary Quality Assurance Organization districts into a formal Primary Quality Assurance Organization, the organization should be defined in greater detail. It should be noted that a Primary Quality Assurance Organization can only be created and maintained if the organization conforms to the five criteria defined by Environmental Protection Agency regulation (see 40 CFR 58, Appendix A, 3.1). California Air Resources Board has begun to define the organization of the Primary Quality Assurance Organization by identifying contacts and performing outreach to the Primary Quality Assurance Organization districts. In order to fully define the Primary Quality Assurance Organization California Air Resources Board must: • Formally identify which districts, monitoring sites, and pollutants are included. • Complete the process of having formal agreements in place between the districts and California Air Resources Board. • Develop and implement an organized and comprehensive training program to support the California Air Resources Board Primary Quality Assurance Organization. • Complete the California Air Resources Board Quality Management Plan that defines Primary Quality Assurance Organization, roles, and activities.

In order to strengthen the Primary Quality Assurance Organization so that it produces data of known and consistent quality, California Air Resources Board should continue working to meet the five criteria. Below is a summary of the work to which California Air Resources Board has committed to achieve this goal.

(1) Although all field operators are not California Air Resources Board staff, California Air Resources Board can continue to take steps to ensure that all Primary Quality Assurance Organization field operators have the benefit of access to background information and support by:

- Implementing routine training programs that are available to all personnel in the Primary Quality Assurance Organization.
- Increasing the level of technical support that is available to Primary Quality Assurance Organization districts.
- Enhancing communication between California Air Resources Board and the Primary Quality Assurance Organization districts.

(2) The California Air Resources Board Primary Quality Assurance Organization has a "universal" quality assurance project plan and standard operating procedures. In order to ensure that the procedures described are consistently followed throughout the Primary Quality Assurance Organization, California Air Resources Board should:

- Continue to update these documents and inform and train Primary Quality Assurance Organization staff on changes.
- Continue to review and approve standard operating procedures from Primary Quality Assurance Organization Districts and make these standard operating procedures available to the entire Primary Quality Assurance Organization.
- Continue to evaluate adherence of Primary Quality Assurance Organization districts to the quality assurance project plan and standard operating procedures.

(3) The California Air Resources Board Primary Quality Assurance Organization has a standards laboratory that is available to all districts, but some Primary Quality Assurance Organization standards are certified by outside sources. To ensure comparable standards throughout the Primary Quality Assurance Organization, California Air Resources Board should:

- Continue to inventory all the standards and their traceability used by the Primary Quality Assurance Organization.
- Continue to evaluate the performance of standards sent to the standards laboratory and issue corrective actions as necessary.
- Determine the need to consolidate some of the standards/standard certifications used by the Primary Quality Assurance Organization in order to promote consistency and save resources.

(4) The California Air Resources Board Primary Quality Assurance Organization has a common quality assurance/quality control evaluation group. However, most of the Primary Quality Assurance Organization districts do not have quality assurance support staff except those available from California Air Resources Board. In order to meet the criteria for a common quality assurance, California Air Resources Board needs to:

- Create a line of quality assurance communication between Primary Quality Assurance Organization staff and quality assurance staff that is separate from the audit process.
- Continue to work on corrective action processes that Primary Quality Assurance Organization district staff can use to elevate quality assurance issues to California Air Resources Board quality

assurance program.
• Ensure that consistent data validation procedures are in place.

(5) The California Air Resources Board Primary Quality Assurance Organization does not have support of common management, headquarters, or laboratory facilities, with the exception of some analytical laboratory analyses performed by the Monitoring and Laboratory Division laboratory for some districts. California Air Resources Board should promote common management practices by:
• Creating standards for oversight of monitoring stations and operations.
• Providing training to monitoring managers.

Actions Taken or Planned to Correct the Cause:

California Air Resources Board has taken steps to strengthen and formalize the California Air Resources Board Primary Quality Assurance Organization structure through the development and implementation of organizational structure changes along with practices and procedures to better address the five common factors used to define a Primary Quality Assurance Organization and effectively integrate monitoring organizations into the California Air Resources Board Primary Quality Assurance Organization.

California Air Resources Board has undergone a re-organization within Quality Management Branch to create a new section, hire additional staff, and reallocate resources to support Primary Quality Assurance Organization activities. Four staff have been dedicated to the newly created Quality Management Section (QMS) and are responsible for acting as liaisons to California Air Resources Board and Primary Quality Assurance Organization Districts and providing quality assurance support and oversight. California Air Resources Board has also generated or revised documents to formalize California Air Resources Board policies, define roles and responsibilities of California Air Resources Board and district monitoring organizations, and assess the current status and needs of the Primary Quality Assurance Organization with respect to quality assurance activities and documents. These changes address the five common factors as follows:

Operation by a Common Team of Field Operators:

- California Air Resources Board has developed a Primary Quality Assurance Organization Roles and Responsibilities document to formalize the roles and responsibilities of California Air Resources Board and monitoring organizations within the Primary Quality Assurance Organization. This document addresses the roles and responsibilities of each with regard to the five common factors of a Primary Quality Assurance Organization. This document includes the need to identify all sites and pollutant monitors included in the California Air Resources Board Primary Quality Assurance Organization
- California Air Resources Board has developed a comprehensive training plan based on input provide by California Air Resources Board and Primary Quality Assurance Organization district monitoring personnel and management. The training will be a multi-session, multi-day event that will cover the fundamentals of air monitoring, network design and siting, station set-up and operation, data management, quality assurance, and hands-on instrument repair and maintenance. The focus of the training will be on the importance of quality assurance/quality control in the generation of legally defensible

data, and the roles and responsibilities each person plays in the process. California Air Resources Board expects to have a contract established by spring 2013 and conduct the first training session by the end of fall 2013.

- California Air Resources Board created Quality Management Section to act as liaisons and a point of contact for quality assurance/quality control or technical questions by California Air Resources Board or Primary Quality Assurance Organization district personnel. Quality Management Section will be responsible for dissemination of quality assurance/quality control information, coordination of the Primary Quality Assurance Organization training program, review of air monitoring programs for compliance with federal, State, and local requirements, and oversight of the preparation and review of quality assurance documents (quality management plan, quality assurance project plans, standard operating procedures, etc.)

Use of Common quality assurance/quality control Documents:

- California Air Resources Board submitted a combined quality management plan/quality assurance project plan to Environmental Protection Agency in August 2012 for review. Based on comments from the review California Air Resources Board is separating the document into a separate quality management plan and quality assurance project plan. California Air Resources Board expects to have a final quality management plan available in June 2013. California Air Resources Board will begin updating the quality assurance project plan document following finalization of the quality management plan.
- California Air Resources Board has developed and distributed a Quality Assurance Activities Survey (QA Survey) to gather information on the quality assurance documents and activities utilized by monitoring organizations within the Primary Quality Assurance Organization. The quality assurance Survey includes: quality management documents (quality management plan and quality assurance project plans); standard operating procedures (standard operating procedures); calibration facilities and standards utilized; data validation and certification procedures; and training plans and records. California Air Resources Board expects all quality assurance Survey responses to be received by January 2013. Survey responses will be reviewed and implementation plans developed between California Air Resources Board and individual Districts as required. Districts must either adopt California Air Resources Board quality management documents and standard operating procedures or develop their own, which will require review and approval by California Air Resources Board and Environmental Protection Agency as appropriate. The survey will be distributed every two years for review and update as necessary by the responsible California Air Resources Board or district staff. quality assurance documents will also be reviewed as part of the California Air Resources Board technical system audit process to ensure monitoring organizations are operating under approved documents and procedures.
- Approved California Air Resources Board and district quality management documents will be maintained in an electronic repository on the Primary Quality Assurance Organization webpage, and will be accessible to all monitoring organizations within the Primary Quality Assurance Organization.
- California Air Resources Board will continue to review and distribute quality management documents (quality management plan, quality assurance project plan, standard operating procedure, etc.)

Use of Common Calibration Facilities and Standards:

- California Air Resources Board will review the quality assurance Survey results to ensure all districts are using either the California Air Resources Board Standards Laboratory or another NIST certified vendor for verification/certification of standards and gases. Monitoring organizations will be encouraged to utilize the California Air Resources Board Standards Laboratory services whenever possible, and California Air Resources Board will periodically review the provided services to ensure they meet the needs of the Primary Quality Assurance Organization organizations.

Oversight by a Common Quality Assurance Group:

- The Quality Management Branch Chief has been designated as the primary quality assurance contact for California Air Resources Board and Primary Quality Assurance Organization monitoring organizations. The Quality Management Branch Chief has the authority to work collaboratively with monitoring organizations to investigate issues and develop corrective actions for situations that impact or may impact data quality.
- The Quality Management Section was created as a liaison to facilitate implementation of the Primary Quality Assurance Organization process and provide quality assurance/quality control support to California Air Resources Board and Primary Quality Assurance Organization organizations, as well as enhance communication between California Air Resources Board and Primary Quality Assurance Organization districts.
- California Air Resources Board has created the corrective action notification (CAN) process that can be used to documents issues that impact or potentially impact data quality, completeness, storage or reporting. The goal of the corrective action notification process is to investigate, correct and reduce the recurrence of these issues. The corrective action notification process will improve data quality and ensure compliance with State, federal, and local requirements. The corrective action notification process may be initiated by any person in California Air Resources Board's Primary Quality Assurance Organization who identifies an air monitoring issue that may impact data quality, completeness, storage, or reporting. Examples of issues include out of date calibration gas standards, incomplete chain-of-custody forms, laboratory parameter outside of specifications, late Air Quality System upload, etc. The responsible organization is expected to investigate the issue and implement appropriate corrective action to resolve the issue and prevent recurrence. A copy of the completed corrective action notification forms, with implemented corrective action, will be sent to the Quality Management Branch for review. Once the Quality Management Branch and responsible organization have worked together to implement appropriate corrective action, a corrective action notification closure letter will be sent by the Quality Management Branch to the responsible organization.
- California Air Resources Board will review the responses from the quality assurance Survey to determine the status of the Primary Quality Assurance Organization data verification/validation processes and work collaboratively with districts to develop a consistent process.
- California Air Resources Board is in the process of developing an standard operating procedure(s) for the data verification/validation processes performed by California Air Resources Board. This procedure can be adopted by Primary Quality Assurance

Organization monitoring organizations, or they can prepare their own procedure to be submitted to California Air Resources Board and Environmental Protection Agency for review and approval.

Support by Common Management, Headquarters, or Laboratory:

- The California Air Resources Board training plan will include training on proper siting, operation, maintenance, and quality assurance/quality control for ambient air monitoring stations. Training will emphasize the need for the use of consistent procedures for the operation and maintenance of monitoring stations.
- California Air Resources Board will provide copies of quality management documents as well as calibration and maintenance forms and checklist on the California Air Resources Board Primary Quality Assurance Organization webpage. Monitoring organizations are encouraged to adopt these documents, forms and checklist, or develop their own and provide to California Air Resources Board for review and approval.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
• California Air Resources Board has finalized the Primary Quality Assurance Organization training plan and expects to have a contract in place by spring 2013. The first training is scheduled to be conducted in fall 2013. • California Air Resources Board distributed the quality assurance Survey and expects to have responses by the end of January 2013. • California Air Resources Board has completed the Corrective Action Notification process and will introduce the program to the Primary Quality Assurance Organization in December 2012. • California Air Resources Board is in the process of revising the quality management plan and expects a final version available in June 2013. • The Primary Quality Assurance Organization quality management document repository is expected to be on-line and available by the end of the first quarter 2013.	Mike Miguel-Chief Quality Management Branch.

Prepared by: Patrick Rainey
Date: 12/7/12

Finding Number: G1

[This section to be filled out by Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: General 2

Finding:
The Quality Management Branch does not have the structure and staff to manage quality assurance oversight of the Primary Quality Assurance Organization districts.
Description of the Problem:
California Air Resources Board should provide quality assurance oversight of local district air monitoring programs. The designation of the Quality Management Branch Chief as the primary quality assurance contact for the Primary Quality Assurance Organization districts would clearly indicate that the authority lies with California Air Resources Board. Formal agreements between the districts and California Air Resources Board are needed to support this authority, as noted in Finding General 1. In order to meet these needs, the Quality Management Branch will need to develop a corresponding organizational structure and staff expertise.
Actions Taken or Planned to Correct the Cause:
California Air Resources Board has taken significant steps to address the organizational structure and staffing necessary to manage the quality assurance oversight for the Primary Quality Assurance Organization Districts. The Quality Management Branch Chief has been designated as the primary quality assurance contact for the Primary Quality Assurance Organization Districts and this authority has been formalized in both the quality management plan and the Primary Quality Assurance Organization Roles and Responsibilities document. Monitoring and Laboratory Division has undergone a re-organization within Quality Management Branch to create a new section, hire additional staff, and reallocate resources to support Primary Quality Assurance Organization activities. The newly created Quality Management Section (QMS) has four dedicated staff responsible for acting as liaisons to Primary Quality Assurance Organization Districts and providing quality assurance support and oversight. California Air Resources Board is also in the process of developing documents to formalize the policies of California Air Resources Board and Primary Quality Assurance Organization Districts, define the roles and responsibilities, and determine the status of the quality assurance activities and documents utilized to support the air monitoring operations conducted by California Air Resources Board and monitoring organizations within the Primary Quality Assurance Organization. These documents include the Quality Management Plan which defines the policies of California Air Resources Board in regard to the operations and quality assurance activities for the Primary Quality Assurance Organization; a roles and responsibilities document that formalizes the roles of California Air Resources Board and Districts with regard to the five common factors required for defining a Primary Quality Assurance Organization; and the Quality Assurance Activities Survey which includes information on the quality assurance practices and procedures used by monitoring organizations within the Primary Quality Assurance Organization.

Finding Number: G2

Timetable for Above Actions	Point-of-Contact for Corrective Action
-A combined Quality Management Plan/Quality Assurance Project Plan document was provided to Environmental Protection Agency for review in August and California Air Resources Board received comments for revision in November 2012. California Air Resources Board expects to have a finalized Quality Management Plan by June 2013. -Completion of Primary Quality Assurance Organization Roles and Responsibilities document by March 2013. -The Quality Assurance Activities Survey was distributed to Districts in September and California Air Resources Board expects to receive all responses by end of January 2013.	Mike Miguel-Chief Quality Management Branch.

Prepared by: Patrick Rainey
Date: December 7, 2012

[This section to be filled out by Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: General 3

Finding:
[Previous Finding Major Finding 6] While progress has been made on updating the California Air Resources Board Quality Assurance Manual with a Quality Management Plan and Quality Assurance Project Plan or equivalent documents, the process is behind schedule.
Description of the Problem:
The California Air Resources Board Quality Assurance Manual was regularly updated until 2007. Based on the Environmental Protection Agency's Technical System Audit finding in 2007, California Air Resources Board agreed to update or replace the Quality Assurance Manual with a document that conformed to the requirements of the Environmental Protection Agency Quality Assurance system. In order for the California Air Resources Board's system to be up-to-date, complete, and useful, current quality assurance planning documents are needed. In addition, Quality Assurance Project Plans/Standard Operating Procedures should be revised when standards or instruments change.
Actions Taken or Planned to Correct the Cause:
The California Air Resources Board has taken steps to address the finding by: 1. The California Air Resources Board submitted the combined Quality Management Plan / Quality Assurance Project Plan to the Environmental Protection Agency in August 2012. It was returned to the California Air Resources Board in November 2012 and is currently being edited based on feedback from the Environmental Protection Agency. Once the document is finalized, it will be distributed for use. 2. The California Air Resources Board is working to establish a schedule for revision of quality management documents (Quality Management Plans, Quality Assurance Project Plans and Standard Operating Procedures). The scheduled will be specified in the California Air Resources Board Quality Management Plan. The Monitoring and Laboratory Division's Quality Management Section will be responsible for facilitating the updates of the documents. 3. The California Air Resources Board distributed a quality assurance activities survey to determine that status of quality management documents used by Districts within the Primary Quality Assurance Organization. Survey will be re-distributed every two years to ensure the current status of documents. 4. The California Air Resources Board will maintain a repository table of finalized California Air Resources Board and District quality management documents on the Primary Quality Assurance Organization web page. Documents will be continually updated by the California Air Resources Board and District staff as procedures and equipment change. 5. Status of quality management documents will be reviewed as part of the California Air Resources Board's Technical System Audit process.

Finding Number: G3

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
1. Finalize the Quality Management Plan June 2013 2. Schedule for updating Quality Management documents will be established by the end of March 2013 and included in the final Quality Management Plan 3. Completed surveys are to be returned to the California Air Resources Board by December 2012. District action plans will be developed by March 2013 4. Quality Management document repository table will be put online in 2013 and continually updated.	Mike Miguel-Chief Quality Management Branch.

Prepared by: Darsi Goto
Date: 11/16/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: General 4

Finding:

Local districts within the California Air Resources Board Primary Quality Assurance Organization do not always have updated quality system documentation for all activities.

Description of the Problem:

Quality system documents include quality management plans, quality assurance project plans, and standard operating procedures. Local districts within the California Air Resources Board Primary Quality Assurance Organization can either adopt the California Air Resources Board's quality system documents or prepare their own. Not all local districts within the California Air Resources Board Primary Quality Assurance Organization have their own approved quality system documents or use the California Air Resources Board's (see Findings Mendocino 1, Imperial 1, and San Joaquin Valley 2)

Actions Taken or Planned to Correct the Cause:

The California Air Resources Board has taken steps to determine the status of quality management documents used by Districts within its Primary Quality Assurance Organization and to ensure that documents are current and readily accessible to all Districts.

1. A Primary Quality Assurance Organization Survey was sent to Districts in September 2012 – Survey requested Districts to list all quality management documents (quality management plan, quality assurance project plans, and standard operating procedures) in use. Surveys will be reviewed by the California Air Resources Board as they are received. The California Air Resources Board will then be contacting Districts as necessary to develop action plans for the update and implementation of quality management documents. The survey will be re-distributed every two years as a status update on use of quality management documents.
2. The California Air Resources Board is developing a repository table containing all of the California Air Resources Board's quality management documents. The table will be made available on the Primary Quality Assurance Organization website. The California Air Resources Board will be encouraging Districts to adopt the California Air Resources Board's quality management documents.
3. The California Air Resources Board will review District quality management documents as part of the California Air Resources Board's Technical System Audit process.

Finding Number: G4

Timetable for Above Actions	Point-of-Contact for Corrective Action
1. Completed surveys are to be returned to the California Air Resources Board by December 2012. District action plans will be developed by the end of March 2013 2. Repository table will be put online in 2013 and continually updated.	Mike Miguel-Chief Quality Management Branch

Prepared by: Darsi Goto
Date: 11/16/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: General 5

Finding:

[Previous Findings Quality Management 1 and Major Finding 3] Quality assurance authority and interactions between the Quality Management Branch and the other branches should be expanded and formalized. The corrective action system should be developed to include actions taken, in addition to reports issued by the Quality Assurance Section auditors and the calibration laboratory.

Description of the Problem:

Based on feedback and observations made during the audit, The California Air Resources Board's Monitoring and Laboratory Division is relying on the Quality Management Branch to provide independent quality assurance leadership. In order for the Quality Management Branch to fulfill this role, the other Monitoring and Laboratory Division branches should acknowledge the Quality Management Branch's quality assurance authority and staff people should be able to raise quality assurance issues to the Quality Management Branch. The Quality Management Branch should be able to exercise quality assurance authority and oversight in a judicious and cooperative manner. The Quality Management Branch should be involved in:

- Planning air monitoring activities and programs.
- Overseeing the implementation of monitoring.
- Evaluating monitoring data and programs.

In addition to quality assurance /quality control support, the specific tasks that must be conducted by the quality assurance independently are:

- Implementation of the Quality Management Plan.
- Review and approval of Quality Assurance Project Plans and other monitoring plans.
- Review and approval of quality assurance components of standard operating procedures.
- Approval of formal corrective actions.
- Quality assurance system training.
- Documentation of required training.
- Performing periodic internal audits (performance, technical, and data).
- Review of data quality summaries and/or control charts, including Data Quality (AMP255) Reports.
- Evaluation of data validation process/reports.
- Evaluation of final data used to make regulatory decisions.

Several specific issues were noted that should be addressed and may be indicative of the broader issue of the Quality Management Branch's role in providing independent quality assurance.

- The Quality Management Branch Chief was not fully exercising the full extent of his authority and oversight over the Air Quality Surveillance Branch.
- The Air Quality Surveillance Branch was hesitant to characterize the Quality Management Branch's role in special projects as oversight.
- The Quality Management Branch does not have approval authority for standard operating procedures produced by the other Monitoring and Laboratory Division branches.

• Updates to the new Quality Assurance Project Plan sections requested by the Quality Management Branch from the other branches have not been completed.
• New monitoring projects were initiated without Quality Management Branch involvement in the planning process.
• During field audits, the auditors perform instrumental tasks that are the responsibility of the station operators.

The California Air Resources Board Quality Management Branch has expanded the corrective action (Air Quality Data Action) process to include calibration laboratory and siting. However, the California Air Resources Board Primary Quality Assurance Organization has not established a corrective action process that is comprehensive and can be initiated by California Air Resources Board or district staff. When a significant quality problem or area for improvement is identified, there should be a formal process to ensure that the problem is addressed throughout the Primary Quality Assurance Organization. The process should be "blind" to the initiator; it should allow for bottom-up, non-punitive initiation of formal corrective actions.

Several issues identified by staff should have been elevated as formal corrective actions requiring systematic changes (see specific findings).

Actions Taken or Planned to Correct the Cause:

California Air Resources Board has taken steps to formalize the quality assurance authority of the Quality Management Branch and to expand the interactions and oversight activities for District and California Air Resources Board monitoring networks. These are described in the Quality Management Plan, Roles and Responsibilities document, and other quality assurance documents.

The Quality Management Branch should be involved in:

- Planning air monitoring activities and programs
- Overseeing the implementation of monitoring
- Evaluating monitoring data and programs

In late summer of 2012, the California Air Resources Board established a new unit, the Quality Management Section that reports to the Quality Management Branch Chief. The section was formed to focus on Primary Quality Assurance Organization related projects and activities in an independent capacity. The Quality Management System has the responsibility for acting as liaison between the California Air Resources Board and monitoring organizations within the California Air Resources Board Primary Quality Assurance Organization; disseminating quality assurance/quality control information; coordinating the air monitoring training program; review/assessment of air monitoring programs for compliance with federal, State, and local requirements; and facilitating and overseeing the preparation, review, and approval of quality assurance documents (Quality Management Plan, Quality Assurance Project Plan, standard operating procedures, etc.) to ensure consistent practices are performed throughout the California Air Resources Board Primary Quality Assurance Organization monitoring network.

The Quality Management Branch Chief has been designated as the primary quality assurance contact for all District and California Air Resources Board monitoring programs within the California Air Resources Board Primary Quality Assurance Organization, with the authority to collaboratively interact directly with California Air Resources Board and District staff and

management. This structure and authority will allow the Quality Management Branch to provide independent facilitation and oversight related to quality assurance activities associated with the planning of air monitoring activities and programs, implementation of monitoring, and evaluation of monitoring data and programs. This policy will be specified in the Quality Management Plan.

Specific tasks that must be conducted independently:

- **Implementation of Quality Management Plan** – The California Air Resources Board submitted a draft Quality Management Plan to the Environmental Protection Agency in August 2012. The California Air Resources Board is evaluating the Environmental Protection Agency's comments received November 2012 and revising the draft Quality Management Plan accordingly. The revised Quality Management Plan will be resubmitted to the Environmental Protection Agency for approval in early 2013. The Quality Management Plan describes the quality management system used by the California Air Resources Board. It is the California Air Resources Board's intention that the Quality Management Plan and associated practices and procedures will be adopted by monitoring organizations that comprise California Air Resources Board Primary Quality Assurance Organization. The intent is to meet or exceed applicable air monitoring requirements, including the requirements of Environmental Protection Agency Order 5360.1 and the applicable sections of Title 40, Code of Federal Regulations 30, 31, and 35, as well as any specific grant agreements. Upon approval by the Environmental Protection Agency, the California Air Resources Board plans to notify all Districts in the California Air Resources Board Primary Quality Assurance Organization and coordinate/oversee the implementation of the Quality Management Plan. The Quality Management Branch will be responsible for coordinating, reviewing and updating the Quality Management Plan on an established schedule, or as needed. The Quality Management Branch, in conjunction with Environmental Protection Agency, will also be responsible for review and approval of Quality Management Plans prepared by Districts within the California Air Resources Board Primary Quality Assurance Organization.
- **Review and Approval of Quality Assurance Project Plans and Other Monitoring Plans** - The Quality Management Branch is currently conducting surveys to determine how quality assurance activities for ambient air monitoring programs are accomplished by Districts within the California Air Resources Board Primary Quality Assurance Organization. The surveys will also enable the California Air Resources Board to assess the status of Quality Assurance documents and activities for Districts in California Air Resources Board's Primary Quality Assurance Organization (planned completion date for Surveys is by the end of the first quarter 2013). The Quality Management Branch has the responsibility for oversight of the review and approval of quality assurance documents (Quality Management Plans, Quality Assurance Project Plans, standard operating procedures, etc.). The process and schedule for review and approval will be specified in the Quality Management Plan.
- **Review and Approval of quality assurance components of standard operating procedures** - The Quality Management Branch Chief, or designee, is responsible for review and approval of quality assurance components of all related standard operating procedures. This review and approval process will be specified in the Quality

Management Plan.

- **Establish a Corrective Action Process that is Comprehensive, Including Approval of Formal Corrective Actions -** A Corrective Action Notification process was developed to document issues that may impact or potentially impact data quality, completeness, storage, or reporting. The Corrective Action Notification process is designed to complement the existing Air Quality Surveillance Branch process and address those situations not covered by the Air Quality Surveillance Branch process. The objective is to improve data quality and to ensure compliance with state, federal, and local requirements by documenting, investigating, and correcting air monitoring issues (including, but not limited to; incomplete logbook or record documentation; incorrect frequency or failure of calibrations or routine checks; expired standards; missed or invalid samples; missing or anomalous data; etc.) and to prevent recurrence. A Corrective Action Notification may be initiated by any member of staff or management that identifies an issue or potential issue. Monitoring organizations within the California Air Resources Board Primary Quality Assurance Organization are encouraged to adopt this process. The Corrective Action Notification form and associated guidance will be available on the California Air Resources Board Primary Quality Assurance Organization website by the end of January 2013.
- **Documentation of Required Training** – The Quality Management Branch will provide training and educational support to the California Air Resources Board and Primary Quality Assurance Organization Districts. This support will include a list of recommended training, development and implementation of a comprehensive training program for ambient air monitoring, and providing links to other available training resources via the California Air Resources Board Primary Quality Assurance Organization website. It is the responsibility of the Districts or California Air Resources Board operational groups to maintain documentation of staff training and to review the records periodically to ensure the training is current and meets the requirements of the job functions being performed. The Quality Management Branch will review the process periodically as part of the Quality Management Plan review and the training records as part of the California Air Resources Board Technical System Audit process.
- **Performing Periodic Internal Audits (performance, technical, and data**) – The Quality Management Branch will continue to conduct performance, laboratory, and other internal audits to verify compliance of the practices and procedures with federal, state, and local requirements. This policy will be specified in the Quality Management Plan and the specific procedures will be specified in Quality Assurance Project Plans and standard operating procedures, as appropriate.
- **Review of Data Quality Summaries and/or Control Charts** – The Quality Management Branch will continue to review data quality summaries and/or control charts on an annual basis as part of the data certification process for precision and accuracy data, and as a component of the California Air Resources Board Technical System Audit process. The Quality Management Branch will also work with other divisions within the California Air Resources Board and Districts to develop tools and procedures to improve available data quality summaries. This policy will be specified in the Quality Management Plan and the specific procedures will be specified in Quality Assurance Project Plans and standard operating procedures, as appropriate.
- **Evaluation of Data Validation Process/Reports** – The Quality Management Branch

will review responses to the Quality Assurance Survey and work collaboratively with the California Air Resources Board and Districts to evaluate data validation processes/reports utilized within the Primary Quality Assurance Organization. The policy for data validation will be described in the Quality Management Plan and the specific procedures will be specified in Quality Assurance Project Plans and standard operating procedures, as appropriate.

- **Evaluation of Final Data Used to Make Regulatory Decisions** – The California Air Resources Board will evaluate final data used to make regulatory decisions and will specify policy in the Quality Management Plan and the specific procedures will be specified in Quality Assurance Project Plans and standard operating procedures, as appropriate.
- **The Quality Management Branch Chief was Not Fully Exercising the Full Extent of His Authority and Oversight over Air Quality Surveillance Branch (including special projects) -** The oversight authority of the Quality Management Branch Chief as the primary point of contact for quality assurance activities for all District and California Air Resources Board air monitoring activities will be defined in the Quality Management Plan. The Quality Management Branch Chief will have authority and oversight in relation to quality assurance activities for the Air Quality Surveillance Branch, including special projects, and will work collaboratively with the Air Quality Surveillance Branch management to assess quality assurance practices and procedures and develop corrective action as needed.
- **The Quality Management Branch Should Have Approval Authority for standard operating procedures Produced by Other Monitoring and Laboratory Division Branches -** The Quality Management Branch Chief, or designee, will have review/approval authority for quality assurance elements related to standard operating procedures produced by other Branches. This policy will be specified in the Quality Management Plan.
- **Quality Assurance Project Plan Updates From Other Branches Not Completed –** The Quality Management Branch will continue to work closely with the California Air Resources Board and District personnel to improve coordination and cooperation in order to facilitate timely completion of required activities and documents. The Quality Management Branch will work closely with other branches to obtain all required updates to complete the Quality Management Plan (estimated completion date is June 2013). The Quality Management Branch's authority to conduct this activity will be specified in the Quality Management Plan. The California Air Resources Board will start revisions and updates to the Quality Assurance Project Plan document following finalization of the Quality Management Plan – Final Quality Assurance Project Plan – December 2013.
- **The Quality Management Branch Should Be Involved in the Planning and Implementation Process of New Monitoring Projects –** The Quality Management Branch will participate in the planning and implementation of new monitoring projects, with the exception of special purpose or research monitoring projects that are not Environmental Protection Agency funded or utilized for regulatory purposes. This process will be specified in the Quality Management Plan.
- **Field auditors should not perform instrumental tasks that are the responsibility of station operators -** California Air Resources Board auditors will continue to work

cooperatively with station operators during the performance audit process, but will ensure that audit activities remain independent of the daily operation activities of the site and not perform tasks that are the responsibility of the station operator. Audits will be conducted in accordance with the appropriate California Air Resources Board audit procedures.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
See specific items above for projected timetable	Mike Miguel, Chief Quality Management Branch

Prepared by: Maria Salomon
Date: November 27, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: General 6

Finding:

Coordination between the California Air Resources Board and districts and the Environmental Protection Agency should be improved.

Description of the Problem:

Several findings identified during this technical system audit relate to insufficient coordination and communication between the California Air Resources Board and the local districts within the California Air Resources Board Primary Quality Assurance Organization, including:

• Previously unreported, but valid Particulate Matter (PM2.5) samples for Imperial County Air Pollution Control District were found at San Diego County Air Pollution Control District that impacted a regulatory decision.

• Issues with the California Air Resources Board data validation were identified for Imperial County Air Pollution Control District and Mendocino County Air Quality Management District.

• District staff sometimes lacked knowledge of Quality Management Plan, Quality Assurance Project Plans, and standard operating procedures.

The California Air Resources Board and the local agencies must take ownership of the data quality and work together to develop processes to avoid the recurrence of problems.

Actions Taken or Planned to Correct the Cause:

California Air Resources Board has implemented and is in the process of implementing systems, since the technical system audit, to improve the communication and coordination between the California Air Resources Board, Districts, and the Environmental Protection Agency.

The California Air Resources Board has:

• Established a Primary Quality Assurance Organization list serve to share information with Districts and the Environmental Protection Agency.

• Created a Primary Quality Assurance Organization contact list that identifies Environmental Protection Agency, California Air Resources Board and District contacts, to facilitate communication.

The California Air Resources Board is:

• Conducting surveys to determine how quality assurance activities for ambient air monitoring programs are accomplished by Districts within the California Air Resources Board Primary Quality Assurance Organization. Survey response will provide the California Air Resources Board with the status of District quality assurance documents and information on the practices utilized by the Primary Quality Assurance Organization to ensure all agencies are working under approved standard operating procedures.

• Participating in monthly California Air Pollution Control Officers Association calls and calls with the Environmental Protection Agency to discuss current developments within the Primary Quality Assurance Organization, issues encountered by monitoring organizations, updates from the Environmental Protection Agency, etc.

The California Air Resources Board plans to:
1) Facilitate quarterly Primary Quality Assurance Organization calls with Districts and the Environmental Protection Agency.
2) Implement a Corrective Action Notification (CAN) process to document, correct and prevent recurrence of issues within the California Air Resources Board Primary Quality Assurance Organization that may impact or potentially impact data quality, completeness, storage, or reporting.
3) Create a public online repository for approved quality management documents, including the Quality Management Plan, Quality Assurance Project Plans and standard operating procedures, used in the California Air Resources Board Primary Quality Assurance Organization.
4) Work with Districts and the Environmental Protection Agency to articulate expectations of the roles and responsibility of all the agencies in the Primary Quality Assurance Organization.
5) Conduct Primary Quality Assurance Organization training modules, covering all major components of California Air Resources Board's quality system.
6) Review district quality assurance documents for approval and completeness as part of the California Air Resources Board technical system audit process.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
1) Facilitate Primary Quality Assurance Organization calls: March 2013 2) Implement Corrective Action Notification process: end of January 2013 3) Create Primary Quality Assurance Organization quality management document repository: March 2013 4) Create Primary Quality Assurance Organization roles and responsibilities document: March 2013 5) Conduct Primary Quality Assurance Organization training modules: Fall 2013	Michael Miguel, Chief Quality Management Branch

Prepared by: Greg Gilani
Date: 12/07/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:

Finding Number: G6

Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Network Management 1

Finding:

Not all agencies within the California Air Resources Board Primary Quality Assurance Organization have approved network plans since this became a requirement in 2006. The current approach to network plans does not provide for a determination of network adequacy on a statewide basis.

Description of the Problem:

There are 35 local air pollution control districts in the state of California (see Table 1) in addition to the California Air Resources Board. Three of these local air districts, Bay Area Air Quality Management District, Sacramento County Air Quality Management District, and San Diego County Air Pollution Control District are their own Primary Quality Assurance Organization and submit annual monitoring network plans. The remaining 32 districts are within the California Air Resources Board Primary Quality Assurance Organization. Twenty-one air districts plus the California Air Resources Board collect ambient air monitoring data under the California Air Resources Board Primary Quality Assurance Organization. In 2012, nine of the districts within the California Air Resources Board Primary Quality Assurance Organization prepared and submitted their own annual monitoring network plan. The California Air Resources Board prepared and submitted an annual monitoring network plan for the remaining local districts in California and for its network. All districts in California except for Mojave Desert Air Quality Management District / Antelope Valley Air Pollution Control District were covered in a network plan in 2011. In the past, not all local districts within the California Air Resources Board Primary Quality Assurance Organization that had assumed responsibility for submitting an annual monitoring network plan have fulfilled the obligation (e.g., Northern Sierra Air Quality Management District, Mojave Desert Air Quality Management District, and Antelope Valley Air Pollution Control District). As a result, regulatory monitors in these areas have been operated for some period without an approved annual monitoring network plan. However, data quality did not appear to be compromised for these periods.

Although the network plans for California have been approved by the Environmental Protection Agency Region 9, the current system of multiple network plans produces information that cannot be easily combined. Since monitoring network requirements often span multiple districts, plans that contain inconsistent information do not provide for a determination of network adequacy on a statewide basis, which is required as part of the annual monitoring network plan process.

Actions Taken or Planned to Correct the Cause:

The Environmental Protection Agency noted that the current approach to network plans does not provide for a determination of network adequacy on a statewide basis. The Environmental Protection Agency recommended that the California Air Resources Board summarize districts' network information and work with districts to reduce any missing/deficient network information, for example minimum monitoring requirements. The Air Quality Analysis Section (AQAS) agrees to summarize information from districts' network plans in summary tables by October 1 of each year, and review them to ensure that the required elements of Title 40, Code of

Finding Number: NM1

Federal Regulations Part 58 are met on a statewide basis. If deficiencies are found, then Air Quality Analysis Section staff will coordinate with districts to address the issues. Finally, Air Quality Analysis Section staff will continue to include any district in the California Air Resources Board network plan that does not intend to prepare their own plan. This information is obtained from a query of Primary Quality Assurance Organization districts that staff conducts each year.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
October 2013	Gayle Sweigert, Manager, Air Quality Analysis Section

Prepared by: Gayle Sweigert
Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Network Management 2

Finding:
The network assessment does not meet all Code of Federal Regulations requirements.
Description of the Problem:
Several districts submit separate network assessments for the State of California. Since requirements for the ambient air monitoring network extend beyond the boundaries of local districts, the assessment must be done at a multi-jurisdictional level. At the time the report was drafted, California Air Resources Board's network assessment for small agencies found that the minimum monitoring requirements were met, the monitoring objectives defined in appendix D were met, all operating sites were critical for the implementation of State and federal air quality standards, and none were proposed to be discontinued. The California Air Resources Board network assessment for small agencies did not address whether new sites were needed, whether existing sites were no longer needed and could be terminated, or whether new technologies were appropriate for incorporation into the ambient air monitoring network, as required by Code of Federal Regulations.
Actions Taken or Planned to Correct the Cause:
The Environmental Protection Agency noted that the network assessment does not meet all federal requirements and recommended that California Air Resources Board /and or districts conduct a multi-jurisdictional assessment. A multi-jurisdictional or statewide assessment is not practical, given the complexity of the monitoring network in California. However, California Air Resources Board staff in the Air Quality Analysis Section (AQAS) is currently working with Environmental Protection Agency Region 9 staff to implement a contract that would evaluate assessment tools and establish formats for required information. This would provide tools that districts and California Air Resources Board could use in their network assessments and facilitate Environmental Protection Agency review. It would also provide for network assessment information to be presented in a more consistent matter throughout the State. The Environmental Protection Agency also expressed the concern that the California Air Resources Board network assessment for small agencies did not address whether new sites were needed or whether they could be discontinued. The network assessment found that the existing monitoring network met existing needs and that no changes were warranted.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
2013: Contract (assuming Environmental Protection Agency funding) 2015: Updated network assessments	Gayle Sweigert, Manager, Air Quality Analysis Section

Prepared by: Gayle Sweigert
Date: December 3, 2012

Finding Number: NM2

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Network Management 3

Finding:

There are Particulate Matter (PM10) monitors listed in local conditions (Local Condition; parameter code 85101), but not Standard Temperature and Pressure (Standard Temperature and Pressure; parameter code 81102 in the Air Quality System), as required for Federal Reference Method/Federal Equivalent Method instruments.

Description of the Problem:

All Particulate Matter (PM10) measurements collected with Federal Reference Method/Federal Equivalent Method instruments are required to be entered into the Air Quality System as Standard Temperature and Pressure (parameter code 81102). It is acceptable to report data under both Local Condition and Standard Temperature and Pressure parameter codes. The following California Air Resources Board monitors were identified as entered under only the Local Condition code:

- South Lake Tahoe (060170011), Parameter Occurrence Code 2.
- Mojave – Poole (060290011), Parameter Occurrence Code 3.
- Bakersfield – California (060290014), Parameter Occurrence Code 5.
- Paso Robles (060792004), Parameter Occurrence Code 2.
- San Luis Obispo (060794002), Parameter Occurrence Code 3.
- Santa Barbara (060830011), Parameter Occurrence Code 1.
- Santa Maria (060831008), Parameter Occurrence Code 2.

The following non-California Air Resources Board sites that are within the California Air Resources Board Primary Quality Assurance Organization were identified as being entered under only the Local Condition code:

- Brawley (060250007), Parameter Occurrence Code 3, Imperial County Air Pollution Control District.
- Niland (060254004), Parameter Occurrence Code 3, Imperial County Air Pollution Control District.
- Corcoran (060310004), Parameter Occurrence Code 7, San Joaquin Valley Air Pollution Control District.
- Madera (060392010), Parameter Occurrence Code 3, San Joaquin Valley Air Pollution Control District.
- Lakeport (060333001), Parameter Occurrence Code 2, Lake County Air Quality Management District.
- Anderson Springs (060333010), Parameter Occurrence Code 1, Lake County Air Quality Management District.
- Glenbrook (060333011), Parameter Occurrence Code 1, Lake County Air Quality Management District.
- Nipomo (060794002), Parameter Occurrence Code 2, San Luis Obispo County Air Pollution Control District.

Actions Taken or Planned to Correct the Cause: California Air Resources Board Particulate Matter (PM10) monitors will be upgraded to report standard temperature and pressure. New BX-965 report processor interfaces will be installed into the monitors to meet Air Quality System

requirements. Upgrades to non-California Air Resources Board sites will be the responsibility of each individual district. The Quality Management Branch will coordinate communication with the Districts to get the data reporting corrected. The California Air Resources Board discussed this finding with Meredith Kurpius (United States Environmental Protection Agency Region IX). As discussed, Meredith agrees with the California Air Resources Board's recommendations.	
Timetable for Above Actions: December 2012 – Start installation of report processor boards into Particulate Matter (PM10) Beta Attenuation Model units; acceptance testing of said Beta Attenuation Model units *Bakersfield – California pending upgrades *South Lake Tahoe will be upgraded when weather permits Quarter 1 2013 – Ship and set-up new Beta Attenuation Models to California Air Resources Board sites Quarter 2 2013 – Start reporting Standard Temperature and Pressure (and Local Conditions)	**Point-of-Contact for Corrective Action** James Pham (916) 327-4716

Prepared by: James Pham
Date: 11/29/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 1

Finding:

[Related Previous Findings Great Basin 3, San Joaquin Valley 3, & Northern Sonoma 2] Documentation at the California Air Resources Board field sites is inadequate and not reviewed by management.

Description of the Problem:

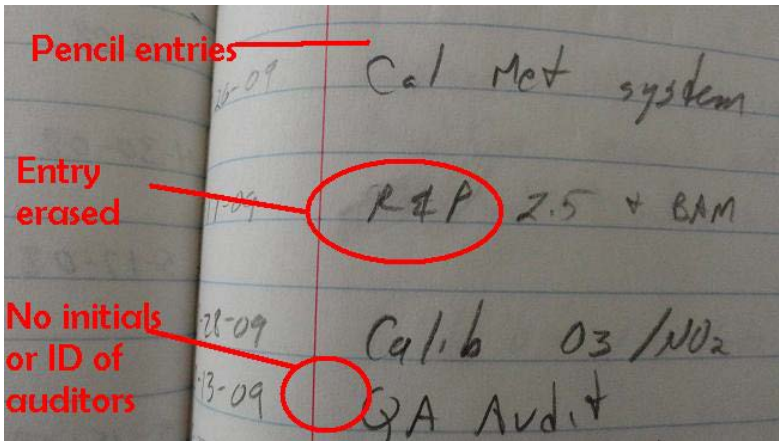
The level and consistency of documentation at the Air Quality Surveillance Branch managed field stations was inadequate to reconstruct the monitoring that was conducted and to resolve definitively the data quality issues identified.

The Air Quality Surveillance Branch site operators use a variety of different documents to record information pertaining to site operations. These include station logbooks, station maintenance sheets, paper strip charts, and data report sheets. Field staff also do not consistently document when they notice something out of the ordinary about the site that could impact readings (construction, weather).

Several specific issues regarding documentation were noted:

• There is no clear direction as to where information regarding instrument issues that could impact the validity of data is recorded and how such information is transmitted to the data validators.

• It is not clear that information recorded by the site operators on monthly data reports is retained as an official record.



• There is not recent evidence that there has been management review of the documentation produced by the station operators.

• Initials do not routinely accompany entries.

• Use of pencil and erasing of records was observed.

• Use of white-out on Chain of Custody forms was observed.

• Entries in logbooks are incomplete, without sufficient information as to who was present at the site, serial numbers of problematic instruments, descriptions of actions taken, and how much data could be impacted.

• There are no field maintenance logbooks for instruments. Logs are kept at the repair shop.

The Monitoring and Laboratory Division should develop a consistent approach to site documentation and review. This may involve
a short-term solution to improve documentation consistency and completeness and a long term solution to convert all site documentation to electronic records that can be more efficiently produced, reviewed, and incorporated into the data validation process.

Finding Number: FO 1

Actions Taken or Planned to Correct the Cause:	
The Monitoring and Laboratory Division will issue a Technical Bulletin to address the specific issues related to field documentation and implement a new data system that allows electronic record keeping. Regarding each instrument, records are kept on the monthly maintenance sheet for each deployed instrument. Records include serial number, make, model, operational checks, and a discussion of data impacts. Monthly maintenance sheets are archived with the monthly data records. A site inventory is kept in the Monitoring and Laboratory Division shop to track instrumentation. Future Data Management System procedures will address electronic tracking of instrumentation, site documentation and data validation.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Technical Bulletin to be issued by March 2013. Electronic record keeping to be implemented in 2014	Norma Montez, Air Pollution Specialist California Air Resources Board (916) 327-4723

Prepared by: Norma Montez
Date: November 14, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 2

Finding:
Management oversight of site operators needs strengthening.
Description of the Problem:
As stated in Finding Field Operations 1, the site operators are not consistently following the Environmental Protection Agency guidance for regulatory ambient air quality data collection. Due in part to the geographic extent of the network, management oversight of the site operations is especially challenging. Nonetheless, procedures for management controls are needed to ensure that site operations produce robust data for regulatory decisions.
Actions Taken or Planned to Correct the Cause:
On April 17, 2012, the California Air Resources Board management issued a document to staff outlining specific steps to be taken by field operators, specialists/engineers, and warehouse staff to minimize data loss. The document states that by the end of each work week, the field operators are required to notify their supervisor on the status of all operational and non-operational equipment, including actions that will be taken to bring them back online. In addition, field operators will notify management of any missed or invalid samples that include the reasons for the missed/invalid sample, as well as plans to make-up the samples. The memo further details responsibilities for Specialists/Engineers to oversee data quality and completeness at each site. During site visits (minimum of twice a year), specialists/engineers are required to review station logbooks and check maintenance data sheets to ensure analyzer/sampler maintenance is being performed. The Specialists/Engineers are required to report any discrepancies to management. Field operators and specialists/engineers are required to review each station's daily zero and precision checks, field operators on a daily basis and weekly for specialists/engineers. Shop/Warehouse staff are to ensure that parts/equipment requests are promptly addressed.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
This was completed in April 2012	Joe Cruz, Air Pollution Specialist California Air Resources Board (916) 322-0243

Prepared by: Joe Cruz
Date: November 14, 2012

[This section to be filled out by the Environmental Protection Agency]

Finding Number: FO 2

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 3

Finding:	
The California Air Resources Board field operators have not been trained on new standard operating procedures.	
Description of the Problem:	
The California Air Resources Board field operators were generally proficient with the procedures they use to conduct their monitoring activities; however, field operators did not always understand why it was important to follow specific protocols and were found to be lax in following requirements in some instances. Further, it was noted that training and/or demonstration of proficiency was not adequately documented.	
Actions Taken or Planned to Correct the Cause:	
The California Air Resources Board's Quality Management Branch is developing a formal training system on current and new standard operating procedures. A tracking method will be developed to track the completed training. The Air Monitoring Web Manual www.arb.ca.gov/airwebmanual is also available to field operators. This site is updated as new/revised Standard Operating Procedures are drafted and finalized. An email is also sent to the Air Quality Surveillance Branch staff and the Quality Management Branch personnel quarterly with an outline of changes made to standard operating procedures.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The California Air Resources Board's Quality Management Section will start offering classes in Fall 2013.	Air Quality Surveillance Branch, Air Monitoring North Jamie Vandermast jvanderm@arb.ca.gov (916) 327-4717

Prepared by: Jamie Vandermast
Date: November 14, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: FO 3

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 4

Finding:

Residence time calculations were not available at any California Air Resources Board sites visited.

Description of the Problem:

Residence time is defined as the amount of time it takes for a sample of air to travel from the opening of the cane to the inlet of the instrument. Title 40, Code of Federal Regulations Part 58, Appendix E Section 9 states that for the reactive gases (Ozone, Nitrogen Dioxide, and Sulfur Dioxide) residence times must be less than 20 seconds. Additionally, it is recommended that the residence time within the manifold and sample lines to the instruments is less than 10 seconds. The station technicians should calculate the residence time, document it in the station logbook, and periodically verify the data.

There were no clear records of residence time of the sampling lines at each site. The site operators did not know how recently the residence time had been recalculated. At a minimum, the residence time should be calculated for each instrument after any change is made to the sampling train, such as the removal or addition of other instruments, and posted at each site.

The station technicians should calculate the residence time, document it in the station logbook or other form available at the site, and periodically verify the measurement.

Actions Taken or Planned to Correct the Cause:

The California Air Resources Board Quality Assurance manual Section 2.04 (February 18, 2000) addresses the residence time calculation procedure. The residence time calculation should be performed annually or anytime a change to the sample system is implemented (change in the probe line, manifold, or analyzers). Below is a sample of a spreadsheet originally developed by the Quality Assurance Section. The spreadsheet has been modified to indicate, by color, if the flow is out of range (conditional formatting). The spreadsheet will be placed on the Califonia Air Resources Board's Air Monitoring Web Manual and will also be emailed to staff. The Quality Assurance Manual will be modified as necessary, to require Site Operators to calculate residence time annually at the beginning of ozone season (by May 1st of each year) or whenever a change is made to the sample train and post the spreadsheet on-site near the manifold in order to comply with the California Air Resources Board Quality Assurance Manual and satisfy the Environmental Protection Agency requirement. California Air Resources Board management will verify that residence time calculations have been performed for all sites by the end of June-2013.

Probe Residence Time Information

SITE: Santa Maria DATE: 5/17/2012 INSTRUMENT TECH: Wagner

Pollutant			NOx	CO	O3			
	Probe	Manifold	Manifold to Instrument	Manifold to Instrument	Manifold to Instrument	Manifold to Instrument	Manifold to Instrument	Manifold to Instrument
Material	Teflon	Glass	Teflon	Teflon	Teflon			
ID (mm)	6.40	25.40	4.80	4.80	4.80			
Length (m)	3.00	0.25	1.50	1.50	1.50			
By-pass pump flow (LPM)	0.00							
Total Flow (Q) LPM*	3.80	2.80	0.50	1.50	1.80			
Time (seconds)	1.52	2.71	3.26	1.09	0.90	#DIV/0!	#DIV/0!	#DIV/0!
Total Residence Time			7.49	5.32	5.14	#DIV/0!	#DIV/0!	#DIV/0!

* includes by-pass pump flow

$$\text{TIME} = \frac{3.14(ID^2) \times \text{LENGTH} \times 0.015}{\text{FLOW}}$$

Common Sample Line Diameters

Outside Diameter (inches)	1/8"	3/16"	1/4"	3/8"	3/8"	5/16"	1/2"	1/2"
Wall Thickness (inches)	0.031"	0.031"	0.031"	0.031"	0.062"	0.031"	0.031"	0.062"
Inside Diameter (mm)	1.6	3.2	4.8	7.9	6.4	6.4	11.1	9.5

Common Manifold Dimentions

Outside Diameter (inches)	Standard MLD Small 5 Port	1.25"	Standard MLD Large 8 Port Manifold	2.0"
Wall Thickness (inches)		0.250"		0.250"
Inside Diameter (mm)		25.4		44.5
Length (meters)		0.25		0.30

Timetable for Above Actions	Point-of-Contact for Corrective Action
Place Spreadsheet on Web Manual - January 2013 E-mail spreadsheet to staff-January 2013 Revise Quality Assurance Manual-January 2013	Phil Wagner Monitoring and Laboratory Division - Air Monitoring South 805-550-6929

Prepared by: Phil Wagner

Finding Number: FO 4

Date: November 14, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 5

Finding:	
Delay in sending Particulate Matter (PM 2.5) samples has resulted in loss of data.	
Description of the Problem:	
Particulate Matter (PM 2.5) samples are subject to a maximum of a 30-day hold from the time the samples are taken to when they are conditioned and weighed. If samples are not maintained at temperatures below the average ambient temperature during sampling, the hold time is limited to 10 days. Samples at one site, Yuba City, were held too long at the station post-collection. In some cases the delay has resulted in the need for immediate conditioning/weighing in laboratory (e.g., 12/4/10) and in other cases has resulted in invalidation (e.g., 9/22/10 and 6/17/10 through 6/20/10).	
Actions Taken or Planned to Correct the Cause:	
The filters now ship out weekly and ship overnight to avoid temperature flags. We no longer have any temperature flags. No filters have been invalidated due to temperature since the weekly overnight shipping process was initiated.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Weekly and overnight shipment of filters began in May 2012.	Debbie Henson Monitoring and Laboratory Division - Air Monitoring South (661) 334-3993

Prepared by: Debbie Henson
Date: 10/29/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Finding Number: FO 5

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 6

Finding:
Particulate Matter make-up samples are not being taken in accordance with the Environmental Protection Agency guidance.
Description of the Problem:
According to the Environmental Protection Agency's April 1999 Guideline on Data Handling Conventions for the Particulate Matter National Ambient Air Quality Standards, Particulate Matter (PM10) make up samples may count toward completeness when collected no more than 7 days after a scheduled sample or if they are collected between the missed sample day and the next scheduled sampling date. For example, a missed sample for a 1-in-6 day schedule could be made up before the next scheduled sample day or the day following the next scheduled sample day.
Actions Taken or Planned to Correct the Cause:
The Northern and Southern Monitoring Sections will be notified via a technical bulletin of the preferred and alternative approaches recommended in the Environmental Protection Agency's "GUIDELINE ON DATA HANDLING CONVENTIONS FOR THE Particulate Matter National Ambient Air Quality Standards" document for make-up samples. Also the pending draft Particulate Matter (PM10) standard operating procedure will be revised to read as follows: From: *"…and a MAKE-UP SAMPLE SCHEDULED FOR THE EARLIEST POSSIBLE DATE."* To: *"…and a MAKE-UP SAMPLE CONDUCTED BEFORE THE NEXT SCHEDULED SAMPLING DAY OR EXACTLY ONE WEEK AFTER THE INVALIDATED RUN. MAKE-UP SAMPLES RUN OUTSIDE OF THIS WINDOW WILL NOT BE CREDITED AS VALID."* The Environmental Protection Agency's "GUIDELINE ON DATA HANDLING CONVENTIONS FOR THE Particulate Matter National Ambient Air Quality Standards" document will be provided to the Northern Laboratory Particulate Matter Section so that they can include the appropriate pages of the document with the next quarterly shipment of filters.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Issuance of Technical Bulletin-January 2013 Particulate Matter (PM10) Standard Operation Procedure revisions-January 2013 Include copy of guidelines in 2nd Quarter filter mail out to operators – February/March 2013	Adolfo Garcia Air Resources Engineer agarcia@arb.ca.gov (626) 575-6701

Prepared by: Adolfo Garcia

Finding Number: FO 6

Date: 11/08/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 7

Finding:	
Particulate Matter (PM10) quality control checks are not consistently recorded. There is no document in which field operators are directed to record this information.	
Description of the Problem:	
Particulate Matter (PM10) quality control checks are being carried out by the California Air Resources Board field operators, but the checks are not consistently documented. The monthly check sheet does not have a monthly flow rate verification entry.	
Actions Taken or Planned to Correct the Cause:	
The Volume Flow controlled Particulate Matter (PM10) monthly check sheet available on our Air Monitoring Web Manual currently has a place to record flow verification readings. A memo will be issued reminding site operators to use the current check sheets available online.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The memo will be issued in January 2013	Dustin Goto, Air Pollution Specialist California Air Resources Board (916) 327-4757

Prepared by: Dustin Goto
Date: November 14, 2012.

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 8

Finding:

The California Air Resources Board field staff does not check data after sending information to the California Air Resources Board offices.

Description of the Problem:

Station operators were unable to account for some data in the Air Quality System. The Environmental Protection Agency found an instance where the station operator made an incorrect note, which resulted in a data point being entered into the Air Quality System that should have been invalidated.

Station operators make notes in the station log, on monthly check sheets, on strip charts, and on the monthly data report. They make notes on all flags contained in the monthly data report, edit the data, and then send everything to the data validator, who reviews the information and calls with any questions.

The station operators do not review the data after the data validator makes changes, and do not look at the data entered into the Air Quality System. They often are not aware that there has been a problem; do not know why certain flags have been entered or why data were invalidated.

Actions Taken or Planned to Correct the Cause:

The primary function of the first level data editor (typically a station operator) is to ensure that the day-to-day functions of ambient air monitoring stations are being met. His/her data review requirements are to ensure that all monitoring station instrumentation are operating properly, conducting station maintenance and documentation of monitoring problems as they arise. In accordance with the California Air Resources Board procedures, first level data reviewers submit ambient air quality data to a second level reviewer (typically a specialist or engineer) and ultimately to their air monitoring supervisor. All data submitted or requiring deletion from the Air Quality System requires approval from the air monitoring section manager.

In accordance with the Air Quality Surveillance Branch policy memo "Documenting Data Quality" dated January 29, 2003 each air monitoring manager is required to submit a monthly data submittal memo to the Chief of the Air Quality Surveillance Branch. This memo documents any data that is considered not suitable for Air Quality System submission with appropriate justification. Once approved these memos are forwarded to appropriate field staff.

To ensure that future data deletions from the Air Quality System are properly documented, California Air Resources Board will make appropriate changes to data validation procedures and or standard operating procedures to require that staff requesting changes to data previously submitted to the Air Quality System, seek appropriate air monitoring section manager approval for changes to Air Quality System.

Finding Number: FO 8

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Update and reissue the Air Quality Surveillance Branch memo "Documenting Data Quality" – Jan 2013	Reggie Smith Manager, Operations and Support Section

Prepared by: Reggie Smith
Date: November 14th, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 9

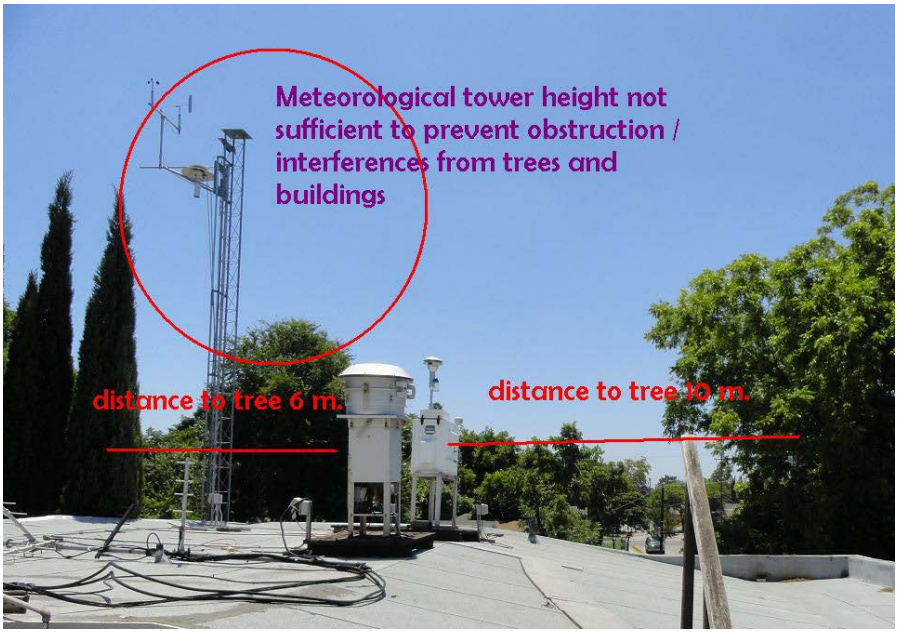
Finding:

The Yuba City site has several significant siting issues that need to be resolved.

Description of the Problem:

The Yuba City site monitors for the following pollutants for comparison to the National Ambient Air Quality Standards: Ozone, Nitrogen Dioxide, Particulate Matter (PM10) (high vol. filter-based), Particulate Matter (PM2.5) (filter-based)
The site also has a Particulate Matter (PM2.5) Beta Attenuation Model that is used for non-National Ambient Air Quality Standards purposes.
The monitors are on the roof of a small commercial building in a generally residential neighborhood. The gaseous probe is on the northeastern portion of the roof. The particulate monitors are on the southern portion of the roof and the Beta Attenuation Model inlet is on the northwestern portion of the roof.

The gaseous probe is within 3 meters of trees and 4 meters from the roadway. This probe must be at least 10 meters from the roadway and the drip line of adjacent trees. This could be resolved by moving the probe to the south and trimming the adjacent trees.
The particulate monitors are within 6 meters of a tree(s) to the east and 10 meters of a tree to the southwest. The instruments must be at least 10 meters from adjacent trees (a distance of 20 meters is preferable). This could be resolved by trimming trees.



The meteorological tower is too short for the surrounding trees and buildings. It is recommended that this tower be elevated to 10 meters above the roof height, if possible. If the tower cannot be adjusted, the data should be used with caution.

Actions Taken or Planned to Correct the Cause:

California Air Resources Board has issued an Air Quality Data Action request, to address the siting issues recorded during this audit. Air Quality Data Action 8152 was issued for the siting of trees at this site. As a result, the trees were trimmed (as shown below) to bring the station in compliance with the applicable requirements. There are plans to move the probe to meet the requirements by June-2013.

Finding Number: FO 9

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The trees were trimmed on June 26, 2012. Probe to be moved by June 1, 2013	Glen Jennings, Air Pollution Specialist California Air Resources Board (916) 324-9748

Prepared by: Glen Jennings
Date: November 14th, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 10

Finding:	
Records indicate that calibrations of gaseous pollutant instruments are not consistently done according to a schedule.	
Description of the Problem:	
Staff and management indicated that calibrations are performed every six months. Calibrations were typically done within the six-month timeframe, but there were instances when instruments were not calibrated for 9-16 months.	
Actions Taken or Planned to Correct the Cause:	
According to Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 2, Section 12.3, Appendix D, Ozone Validation Template calibrations are required to be conducted every 6 months. A calibration data base is being established to better track calibration dates. This will ensure that all sites are being calibrated every six months as required. Also being considered is a modification to the automatic nightly calibration procedures in order to be able to perform yearly calibrations instead of every 6 months.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Review calibration dates and calibrate – Completed July 2012 Calibration data base – May 2013	Fredrick L. Burriell Monitoring and Laboratory Division – Air Monitoring South (916) 327-0886

Prepared by: Fredrick L. Burriell
Date: 11/08/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Finding Number: FO 10

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 11

Finding:	
[Previous Finding Air Quality Surveillance Branch 7] The number of Nitrogen Dioxide titration points taken during calibration does not meet regulatory requirements.	
Description of the Problem:	
The Environmental Protection Agency regulation requires that Nitrogen Dioxide calibrations be verified with a minimum of 3 points; 5 points are recommended. The Air Quality Surveillance Branch calibration group only takes 2 Nitrogen Dioxide titration points.	
Actions Taken or Planned to Correct the Cause:	
Pursuant to Title 40, Code of Federal Regulations Appendix F to Part 50, the number of Nitrogen Dioxide titration points taken during a calibration will be raised to a minimum of three. Field Calibration worksheets will be amended to reflect this change. Future Nitrogen Oxide analyzer standard operation procedures will state the requirement for three Nitrogen Dioxide titration points. Also the three affected monitoring groups of the Air Quality Surveillance Branch will be notified via technical bulletin of the resolution to this finding.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Issuance of Technical Bulletin-January 2013 Calibration worksheet changes-January 2013 Standard operating procedure revision – January 2013	Adolfo Garcia Air Resources Engineer agarcia@arb.ca.gov (626)575-6701

Prepared by: Adolfo Garcia
Date: 11/08/12

[This section to be filled out by the Environmental Protection Agency]
Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 12

Finding:
Multi-point calibrations of Particulate Matter (PM2.5) instruments are not done routinely.
Description of the Problem:
The Air Quality Surveillance Branch calibration group performs single point calibrations of Particulate Matter (PM2.5) instruments every six months. There is no provision for these instruments to be checked with a multi-point calibration on a regular basis, as required by Title 40, Code of Federal Regulations Part 50, Appendix L. It is recommended that multi-point checks be performed annually for sampler flow. Multi-point checks of the Particulate Matter (PM2.5) sampler temperature and pressure sensors should also be performed if physically possible.
Actions Taken or Planned to Correct the Cause:
Air Quality Surveillance Branch performs Particulate Matter (PM2.5) Federal Reference Method flow calibration procedures to each deployed sampler every six months. Currently, per Air Quality Surveillance Branch's Particulate Matter (PM2.5) sampler standard operating procedures (Rupprecht & Patashnick Partisol-Federal Reference Method 2000 403 Standard Operating Procedure and Rupprecht & Patashnick Partisol-Federal Reference Method 2025 404 Standard Operating Procedure); the station calibrator performs semi-annual single point flow verification. If the measured flow rate is greater than or less than 2% of the expected 16.67 liters per minute (<16.34 or >17.00 liters per minute) a multi-point calibration is then performed using the samplers firmware driven procedure. Following a multi-point calibration, single point flow rate verification is performed. Sampler calibration is complete if the resulting single point verification is within 2% of the expected 16.67 liters per minute flow rate. Particulate Matter (PM2.5) Federal Reference Method filter samplers do not possess a multi-point flow rate verification procedure. The Federal Reference Method operator manuals only specify a multiple calibration/adjustment procedure and a single point audit verification procedure. No multi-point verification procedure exists in the manufacturer's manuals or firmware. Attached are the Rupprecht & Patashnick 2000 Standard Operating Procedure Calibration Procedures "as-is" flow verification sheets and the "final" calibration spreadsheets provided by the Air Monitoring North Section of the Air Quality Surveillance Branch, Monitoring and Laboratory Division of the California Air Resources Board. The final calibration spreadsheets indicate multipoint calibrations were performed due the adjustment of flow which is only done if a multipoint flow calibration was performed (see attachment). The California Air Resources Board discussed this finding with Meredith Kurpius (Environmental Protection Agency Region IX). As discussed, Meredith agrees with the

Finding Number: FO 12

California Air Resources Board's recommendations.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Continue to calibrate per Air Quality Surveillance Branch's standard operating procedure for Rupprecht & Patashnick 2000 and update Rupprecht & Patashnick 2025 standard operating procedure and calibration sheet to reflect multi-point calibration procedures Jan. 2013	Steve Aston Special Purpose Monitoring Section Air Resources Engineer 916-327-4724

Prepared by: Mac McDougall
Date: 11/29/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

AJ.2.1 CALIBRATION PROCEDURES

AJ.2.1.1 AS-IS FLOW CHECK

The "as-is" flow verification is the first step for routine calibration of the R&P 2000 (initial sampler setup does not require an as-is flow verification since a full instrument calibration is required). The as-is flow check procedure (R&P manual, Section 10.2.6) is performed to verify the working status of the sampler by ensuring that the calculated true flow at the inlet of the sampler is +/- 2% of 16.7 LPM. If the calculated true flow of the sampler is between 16.4 - 17.0 LPM, flow calibration is not necessary unless any subsequent sensor or electronic board adjustments alter the flow. There are two methods to verify and calibrate flow. The first method measures flow directly with a mass flow meter (MFM); the second method uses the Streamline Flow Transfer Standard (FTS) which measures a pressure differential. Both MFM and FTS data must be corrected to true flow using temperature and pressure data.

1. AS-IS FLOW CHECK USING MFM:

   The MFM procedure is the method of choice for verifying inlet flow because the MFM method measures flow directly. The following procedure describes how to verify flow with a certified MFM.

   a. Carefully remove and replace the 1st stage inlet impactor with the flow audit adaptor and open the stop cock valve.

   b. Connect the flow inlet adaptor to the MFM.

   c. Start in the main screen by pressing <**ESC**> if necessary and make sure that the sampler is in the "stop" operating mode by pressing <**F4: Run/Stp**> until "stop" is displayed in the upper right hand corner.

   d. Install a filter cassette containing a 47mm filter into filter holding mechanism.

   e. Press <**F5: Setup**>, then <**F5: Audit**>, then <**F2: Valve**> and then <**F3: Pump**>.

   f. Allow the sampler flow and MFM reading to stabilize and record the measured flow reading.

g. Calculate true flow from the measured flow reading and determine the percent difference from 16.7 LPM. The equation used for calculating true flow is:

$$\text{Volumetric flow} = \frac{(\text{std. flow})(760\text{ mm Hg})(\text{ambient temp in K})}{(\text{ambient pressure in mm Hg})(298\text{ K})}$$

NOTE: The equation for standard flow used above is:

std. Flow = [(MFM disp)(MFM cert. Slope)] + (MFM cert. Intercept)

h. If the calculated true flow differs more than +/- 2% of 16.7 LPM, the R&P 2000 sampler flow must be recalibrated. If the flow is out of range or unstable, it may be possible that a leak is the cause. Check your flow check equipment to make sure the they are not at fault. The calculation for % difference is:

$$\frac{(\text{True flow} - 16.7)}{16.7} \times 100\%$$

NOTE: When finished, press <ESC> twice to return to main screen.

2 AS-IS FLOW CHECK USING FTS:

The FTS method is the secondary method of choice when used for measuring inlet flow because the FTS measures a pressure differential and must be converted to flow units. The FTS is an accurate device and appears to work well when used as a calibration tool, but when possible, the primary choice for verifying flow should be a flow measuring device. The following procedure describes how to use the FTS as a flow check device.

a. Carefully remove and replace the 1st stage inlet impactor with the FTS fixed orifice (the fixed orifice should be connected to the minus (-) port of the digital flow manometer by the supplied piece of black rubber tubing).

b. Start in the main screen by pressing <**ESC**> if necessary and make sure that the sampler is in the "stop" operating mode by pressing <**F4:**

Run/Stp> until "stop" is displayed in the upper right hand corner.

c. Install a filter cassette containing a 47mm filter into filter holding mechanism.

d. With the digital manometer turned on and in "measuring in inches of water", adjust the silver colored knob at the top of the manometer (located between the + and - ports), until a reading of 0.00" H_2O is reached (zeroing the manometer).

e. Press <**F5: Setup**>, then <**F5: Audit**>, then <**F2: Valve**> and then <**F3: Pump**>.

f. Allow the sampler flow and FTS reading to stabilize and record the measured pressure reading.

g. Calculate true flow from the measured FTS reading and determine the percent difference from 16.7 LPM. The true flow conversion equation, orifice slope and intercept used for calculating true flow is located on the fixed orifice and included below:

$$\text{True flow} = \left[(\text{orifice m})\left(\frac{\text{FTS P} \times \text{AmbT K}}{\text{AmbP atm}}\right)^{0.5}\right] + (\text{orifice b})$$

Where: orifice m = orifice slope
orifice b = orifice intercept
FTS P = FTS differential pressure reading in inches of water
AmbT K = ambient temperature in Kelvin
(273 K + ambient ^{O}C)
AmbP = ambient pressure in atmospheres =ambient pressure in mmHg/760mmHg
(1 atm. = 760 mm Hg amb/760 mm Hg)

h. If the calculated true flow differs more than +/- 2% of 16.7 LPM, the R&P 2000 sampler flow must be recalibrated. If the flow is out of range or unstable, it may be possible that a leak is the cause. Check your flow check equipment to make sure that they are not at fault.

NOTE: When finished, press <ESC> twice to return to main screen.

R&P Partisol Plus Model 2025 Sequential Air Sampler (Deltacal)

ID Information:		Instrument:	
Station Name:	Yuba City	Make:	R&P
ARB Station Number:	51-898	Model:	2025
Station Address:	Almond St	Property #:	20020970
Agency:	CARB	Serial #:	N/A
Operatory:	R. Rigsby		

Calibration:	
"As Is"	X
"Final"	
Calibration Date:	6/16/09
Report Date:	6/16/09
Prev. Cal. Date:	N/A

Flow Standard:	
Make & Model:	BGI
I.D. #:	20021356
Cert Date.:	5/29/2009
Cert Exp.:	5/29/2010

Time Standard:	
Make & Model:	AT&T
Certification #:	N/A
Cert Date:	N/A

Time:	Sampler:	Standard:
Date:	6/16/2009	6/16/2009
Hours:Minutes:Sec:	10:58:00	10:47:00

Temperature: (deg. C)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	24	24.5	0.50	2.04%		
Filter:	26.9	27.6	0.70	2.54%		
Filter Compartment:	32	28	-4.00	-14.29%		

Pressure: (mm Hg)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	756	757	1.00	0.13%		

Leak Test: (LPM)	Pressure Drop (mm Hg)
External	22
Internal	N/A

Volumetric Flow Tests (LPM)	Sampler Display:	Flow Transfer Std: (in H2O)	Volumetric vs Design Flow: (+/- Percent)	Volumetric Flow vs Sampler Display (+/- Percent)	Previous Span	Previous Offset	New Span	New Offset
Flow	16.7	17.1	2.40%	2.34%				

Comments	Leak Check passed with 22. Final Required due to flow.
Calibrated By:	VANDERMAST
Checked By:	

R&P Partisol Plus Model 2025 Sequential Air Sampler (Deltacal)

ID Information:		Instrument:	
Station Name:	Yuba City	Make:	R&P
ARB Station Number:	51-898	Model:	2025
Station Address:	Almond St	Property #:	20020970
Agency:	CARB	Serial #:	N/A
Operatory:	R. Rigsby		

Calibration:	
"As Is"	
"Final"	X
Calibration Date:	6/16/09
Report Date:	6/16/09
Prev. Cal. Date:	N/A

Flow Standard:	
Make & Model:	BGI
I.D. #:	20021356
Cert Date.:	5/29/2009
Cert Exp.:	5/29/2010

Time Standard:	
Make & Model:	AT&T
Certification #:	N/A
Cert Date:	N/A

Time:	Sampler:	Standard:
Date:	6/16/2009	6/16/2009
Hours:Minutes:Sec:	10:58:00	10:47:00

Temperature: (deg. C)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	23.2	23	-0.20	-0.87%		1.24
Filter:	26.9	27.6	0.70	2.54%		0
Filter Compartment:	28	28	0.00	0.00%		-3.65

Pressure: (mm Hg)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	756	757	1.00	0.13%		-5.2

Leak Test: (LPM)	Pressure Drop (mm Hg)
External	22
Internal	N/A

Volumetric Flow Tests (LPM)	Sampler Display:	Flow Transfer Std: (in H2O)	Volumetric vs Design Flow: (+/- Percent)	Volumetric Flow vs Sampler Display (+/- Percent)	Previous Span	Previous Offset	New Span	New Offset
Flow	16.7	16.69	-0.06%	-0.06%	0.98	-0.194	1.002	0.147

Comments	All final checks passed.	
Calibrated By:	VANDERMAST	Checked By:

R&P Partisol Plus Model 2025 Sequential Air Sampler (Deltacal)

ID Information:		Instrument:	
Station Name:	Colusa	Make:	R&P
ARB Station Number:	06-643	Model:	2025
Station Address:	Sunrise Blvd	Property #:	20020964
Agency:	CARB	Serial #:	N/A
Operatory:	R.Rigsby		

Calibration:	
"As Is"	X
"Final"	
Calibration Date:	6/25/09
Report Date:	6/25/09
Prev. Cal. Date:	N/A

Flow Standard:	
Make & Model:	BGI
I.D. #:	20021356
Cert Date.:	5/29/2009
Cert Exp.:	5/29/2010

Time Standard:	
Make & Model:	AT&T
Certification #:	N/A
Cert Date:	N/A

Time:	Sampler:	Standard:
Date:	6/25/2009	6/25/2009
Hours:Minutes:Sec:	9:32:00	9:32:00

Temperature: (deg. C)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	24.1	24.5	0.40	1.63%		
Filter:	24	23.5	-0.50	-2.13%		
Filter Compartment:	24.5	25	0.50	2.00%		

Pressure: (mm Hg)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	757	756	-1.00	-0.13%		

Leak Test: (LPM)	Pressure Drop (mm Hg)
External	14
Internal	N/A

Volumetric Flow Tests (LPM)	Sampler Display:	Flow Transfer Std: (in H2O)	Volumetric vs Design Flow: (+/- Percent)	Volumetric Flow vs Sampler Display (+/- Percent)	Previous Span	Previous Offset	New Span	New Offset
Flow	16.7	17	1.80%	1.76%				

Comments	Leak Check passed = 14mmHg All "As Is" checks passed.
Calibrated By:	VANDERMAST
Checked By:	

R&P Partisol Plus Model 2025 Sequential Air Sampler (Deltacal)

ID Information:		Instrument:	
Station Name:	Colusa	Make:	R&P
ARB Station Number:	06-643	Model:	2025
Station Address:	Sunrise Blvd	Property #:	20020964
Agency:	CARB	Serial #:	N/A
Operatory:	R.Rigsby		

Calibration:	
"As Is"	
"Final"	X
Calibration Date:	6/25/09
Report Date:	6/25/09
Prev. Cal. Date:	N/A

Flow Standard:	
Make & Model:	BGI
I.D. #:	20021356
Cert Date.:	5/29/2009
Cert Exp.:	5/29/2010

Time Standard:	
Make & Model:	AT&T
Certification #:	N/A
Cert Date:	N/A

Time:	Sampler:	Standard:
Date:	6/25/2009	6/25/2009
Hours:Minutes:Sec:	9:40:00	9:40:00

Temperature: (deg. C)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	24.3	24.5	0.20	0.82%	0	0
Filter:	24.6	25.4	0.80	3.15%	0	0
Filter Compartment:	26.2	26.3	0.10	0.38%	0	-2.54

Pressure: (mm Hg)	Sampler:	Standard:	Differ From True:	% Deviation	Previous Offset	New Offset
Ambient:	757	756	-1.00	-0.13%	0	0

Leak Test: (LPM)	Pressure Drop (mm Hg)
External	14
Internal	N/A

Volumetric Flow Tests (LPM)	Sampler Display:	Flow Transfer Std: (in H2O)	Volumetric vs Design Flow: (+/- Percent)	Volumetric Flow vs Sampler Display (+/- Percent)	Previous Span	Previous Offset	New Span	New Offset
Flow	16.7	16.61	-0.54%	-0.54%	1.052	0.0014	1.086	0.359

Comments	Leak Check passed = 14mmHg Adjusted Flow and Compartment Temperature.
Calibrated By:	VANDERMAST
Checked By:	

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 13

Finding:
[Previous Finding Air Quality Surveillance Branch 8] Air Quality Surveillance Branch is not formally documenting the quality of zero air being used in the program.
Description of the Problem:
Zero air scrubbers are used in place of certified zero air for instrument calibrations. This is a common practice and acceptable. Because zero air is used to generate the zero point and the calibration mixes, it must be treated as a standard. As such, zero air scrubber maintenance and verification must be documented.
Actions Taken or Planned to Correct the Cause:
Instruments in the California Air Resources Board stations are challenged nightly with certified gas standards. Zero air scrubbers are used as a source of dilution air to bring the gas standards to the appropriate concentration for each instrument. Station operators are required to make daily, monthly and annual checks to ensure that the zero air scrubbers are operating within design parameters and supplying clean dilution air. The California Air Resources Board quality control maintenance check sheet follows the manufacturer's recommendation for maintenance and service and provides adequate documentation for zero air scrubbers used in this capacity. In addition to nightly challenges, California Air Resources Board performs field calibrations to each instrument semiannually. The source of dilution air varies between the use of portable zero air scrubbers, station zero air scrubbers or certified zero air standard cylinders. The California Air Resources Board proposes to require the use of certified zero air standard cylinders as a dilution air source when performing semiannual calibrations. The Air Quality Surveillance Branch will also issue a memo to station operators, instrument calibrators and section managers of the change in the California Air Resources Board policy. The memo will remind all personnel of the station standard operating procedures and the need to fully complete the monthly check sheet for zero air scrubbers and submit completed documentation to approving managers. The California Air Resources Board discussed this finding with Meredith Kurpius (Environmental Protection Agency Region IX). As discussed, Meredith agrees with the California Air Resources Board's recommendations.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Three months after receiving written approval from Environmental Protection Agency: California Air Resources Board will issue policy memo to affected California Air	Harlan Quan hquan@arb.ca.gov

Resources Board personnel or modify applicable standard operating procedures.	

Prepared by: Mac McDougal
Date: November 14th, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

CALIFORNIA AIR RESOURCES BOARD
MONTHLY QUALITY CONTROL MAINTENANCE CHECK SHEET
API Model 701 Zero Air Module

Location: _____ **Month/Year:** _____
Station Number: _____ **Operator:** _____
Property Number: _____ **Agency:** _____

OPERATOR INSTRUCTIONS:

1. **Daily checks:**

Check	ON	OFF
Power light (Red).		
Hygrometer light (Green).		

2. **Monthly Checks:**

Check	Recorded	Target
Check and record output pressure.		**35 PSI ± 1 PSI**
Adjusted pressure (if applicable).		
Confirm the presence of water in the moisture output trap.		

3. **Annual Checks:**

Check	Last Recorded	Current
Change the activated carbon filter as needed or at a minimum of once per year.		
Change the Purafil® filter as needed or at a minimum of once per year.		

4. **As Required Checks:**

Check	Last Recorded	Current
Verify the cut-in and cut-out pressures		
Check operating temperature of the hydrocarbon scrubber		

Date	Comments, Checks, or Maintenance Performed:

Reviewed by: _____ Date: _____

AQSB QC Form 702 (API 701) Rev. 05/07

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 14

Finding:	
Span and precision gases used in the field are not being calibrated routinely.	
Description of the Problem:	
In order to reduce the number of gaseous standards that are recertified, the Air Quality Surveillance Branch has not had the field standards used for span and precision checks of Carbon Monoxide, Nitrogen Dioxide, and Sulfur Dioxide certified routinely. Environmental Protection Agency regulations require that standards used to perform the required quality control checks every two weeks must be certified. The Air Quality Surveillance Branch continued to use certified gases for routine instrument calibrations.	
Actions Taken or Planned to Correct the Cause:	
Currently the Monitoring and Laboratory Division's Standards Laboratory is updating its cylinder certification program. When this certification program is implemented, ALL gas standards used by the Air Quality Surveillance Branch will be certified by the Monitoring and Laboratory Division's Standards Laboratory. Gas standards that are unable to be certified by the Monitoring and Laboratory Division's Standards Laboratory (i.e. low level trace standards) will be shipped to the respective vendor for periodic certification.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Implementation of Standards Laboratory updated cylinder certification program – July 2013	Reggie Smith Manager, Operations and Support Section

Prepared by: Reggie Smith
Date: November 14th, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Finding Number: FO 14

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Field Operations 15

Finding:

Instruments removed from the field are not always efficiently tracked and returned to the repair laboratory facility for diagnosis, repair, and reuse. Loss of data has occurred due to unavailability of spare instruments.

Description of the Problem:

The instrument tracking/information system has at least three different components: 1) an electronic database intended to keep basic tracking information for all of the agency's supplies and equipment; 2) a hard copy Parts and Supplies binder kept in the Monitoring and Laboratory Division's stockroom that at the time of the audit displayed a last revision date of August 2009; and 3) an instrument filing cabinet kept in the Monitoring and Laboratory Division's instrument laboratory, with the intention that each instrument have its own individual folder with detailed information about acceptance tests, repairs, and other relevant history. It is likely that all of these sources together contain most of the useful and necessary information needed to accompany an instrument. It may become difficult to find and correlate information from the three different systems. A better approach would be to combine all three into one centralized system specific to monitoring equipment.

The operations support manager stated that replaced instruments are sometimes left at sites and may go unnoticed until there is a shortfall in the laboratory. In such cases, the approach used to find these missing instruments can be rather tedious, involving calling multiple sites before finding the orphaned instrument. The instrument tracking system maintained by the agency is not efficient and has the potential to impact data completeness. In one instance, data completeness was impacted at the Sutter Buttes site during the summer of 2011 when a malfunctioning Ozone instrument was not promptly replaced due to the lack of a spare. The California Air Resources Board should develop a system that tracks instruments so that they are diagnosed and repaired promptly to be available for reuse.

Actions Taken or Planned to Correct the Cause:

The California Air Resources Board's Operations and Support Section currently maintains an equipment inventory tracking system. This system tracks ALL instrumentation used by the Air Quality Surveillance Branch. The purpose of this database is to track the make, model, barcode, serial number, location and purchase information of equipment. The inventory database does not facilitate the return of equipment to repair facilities.

To facilitate the return of monitoring equipment for diagnostic and repair to the Operation Support Section's instrument laboratory, the Air Quality Surveillance Branch has implemented a Branch policy "Minimizing Instrument Downtime and Improving Data Completeness" dated April 17, 2012. In accordance with this Branch policy:

Site operators are required to alert supervisors if requested repair parts are not available or not

expected to be available within three working days. In addition, operators are required to return repairable parts and equipment to the warehouse or instrument laboratory promptly. The Operation Support Section's warehouse and instrument laboratory staff are required to notify their supervisor when spare instruments are not available, provide constructive feedback to field staff when equipment "failures" cannot be duplicated and track/verify that equipment and repairable parts are returned from field.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
COMPLETE – April 2012	Reggie Smith Manager, Operations and Support Section

Prepared by: Reggie Smith
Date: November 14, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 1

Finding:
The data validation and review/verification procedures performed by the Air Quality Surveillance Branch, Northern Laboratory Branch, and Air Quality Analysis Section are not formally published in a control-copied standard operating procedure.
Description of the Problem:
Standard operating procedures detail the work procedures that are to be conducted or followed within an organization. Standard operating procedures document the way activities are to be performed to ensure consistent conformance to technical and quality system requirements and to support data quality. Standard operating procedures are intended to be specific to the organization or facility whose activities are described and assist that organization to maintain their quality control and quality assurance processes and ensure compliance with governmental regulations. Well-written standard operating procedures can also serve as training materials and as references for staff, particularly if they are updated regularly (the recommendation is every three years). Standard operating procedures should be distributed in a manner that ensures that only the most recent versions are used and that historical standard operating procedure revisions are retained (these are sometimes called "controlled-copies"). Standard operating procedures should also be developed to enable individuals to transition into new positions. Deviations and changes from standard operating procedures should be dated, documented, and kept in a bound or electronic document routinely accessed by and accessible to all staff.
Actions Taken or Planned to Correct the Cause:
We will update Section 2.0.2 of Volume II of our Quality Assurance Manual with information about our data validation and review/verification procedures. The updated document (previously updated in April 2000) will be uploaded here: http://www.arb.ca.gov/airwebmanual/vol2.php

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
February 2013	Dustin Goto, Air Pollution Specialist California Air Resources Board (916) 327-4757

Prepared by: Dustin Goto
Date: November 14th, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding

Finding Number: DM 1

Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 2

Finding:

[Previous finding Major Finding 7] Data submitted by local districts within the California Air Resources Board Primary Quality Assurance Organization are not validated using consistent procedures. (See Findings San Joaquin Valley 9, Imperial 10, and Mendocino 11)

Description of the Problem:

In order to maintain a consistent data set, a Primary Quality Assurance Organization should have a standard for routine data validation. However, the California Air Resources Board Quality Assurance Manual does not require a specific validation scheme for each of the criteria pollutants. This results in data validation that is inconsistent and has the appearance of being arbitrary, which is of special concern when data are used for National Ambien Air Quality Standards determination.

It is unclear to agencies within the California Air Resources Board Primary Quality Assurance Organization what the roles and responsibilities are for data validation and submittal. For example, California Air Resources Board/Air Quality Analysis Section uploads continuous data for two of the local districts we audited as part of this Technical System Audit. These districts expected that California Air Resources Board would validate their data as part of this process. In fact, California Air Resources Board/ Air Quality Analysis Section does not validate data for any agency. This misunderstanding has resulted in unvalidated and sometimes erroneous data being entered into Air Quality System.

Actions Taken or Planned to Correct the Cause:

The Environmental Protection Agency noted that data submitted by local districts within the California Air Resources Board Primary Quality Assurance Organization are not validated using consistent procedures. To address this finding, California Air Resources Board is taking three steps. First, in response to the Environmental Protection Agency's concern that districts need further clarification regarding their data validation responsibilities, California Air Resources Board will be sending a document, Roles and Responsibilities, to all districts in the California Air Resources Board Primary Quality Assurance Organization. This document will formalize the Primary Quality Assurance Organization by identifying the roles and responsibilities of each district, including responsibilities for data validation. In addition, districts within the Primary Quality Assurance Organization will be required to use the data validation procedures developed by the California Air Resources Board (accessible in standard operating procedures on California Air Resources Board's Primary Quality Assurance Organization website) or their own data validation procedures that are included in their approved Quality Management Plan or standard operating procedures. Finally, the Monitoring and Laboratory Division of the California Air Resources Board will be providing a formal Primary Quality Assurance Organization training for the districts within the California Air Resources Board Primary Quality Assurance Organization. The Primary Quality Assurance Organization training will consist of three sessions, each being

approximately 2-3 days long. The training will be held in both southern and northern California and will cover a variety of topics—including data validation procedures.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
- Roles and responsibilities document to be implemented quarter 1, 2013. - Primary Quality Assurance Organization training scheduled to begin fall 2013.	Michael Miguel, Chief Quality Management Branch

Prepared by: Gayle Sweigert
Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 3

Finding:
[Previous Finding Data Management 5] The Air Quality Analysis Section does not ensure that local district data are validated prior to upload to the Air Quality System.
Description of the Problem:
The California Air Resources Board /Air Quality Analysis Section uploads continuous data for ten local districts. The California Air Resources Board has standard operating procedures for its staff who upload district data into the Air Quality System, but there is no formal documentation that guides roles and responsibilities for ensuring that appropriate data validation and submittal procedures are followed by the local districts. Several local districts are not validating data prior to submittal to the California Air Resources Board /Air Quality Analysis Section for upload. Those local districts that do validate their data are not following any consistent approach.
Actions Taken or Planned to Correct the Cause:
Similar to the finding in Data Management 2, this finding is also about data validation. However, this finding is more specific and focused on the data submitted by the Air Quality Analysis Section. The Roles and Responsibilities document will be sent to districts to formalize Primary Quality Assurance Organization responsibilities and will clarify in writing the districts' responsibilities for data validation. In addition, districts for whom the Air Quality Analysis Section submits data will benefit from the training that the California Air Resources Board is planning on providing next year. In addition, Air Quality Analysis Section staff will also host a conference call for interested districts to discuss any questions or issues related to the Air Quality System data submittal and validation on a quarterly basis, beginning in 2013. The quarterly call is an additional forum to enhance communication between the districts and the California Air Resources Board. Finally, to further improve the quality of the data in the Air Quality System, Air Quality Analysis Section staff has begun implementation of a post-submittal data review process. This process includes producing graphs and summary tables using Discoverer, (with data from districts for whom the Air Quality Analysis Section is the data submitter) and reviewing the data within five working days after submittal to Air Quality Section. This new procedure will be incorporated into the existing Air Quality Analysis Section Data Management Standard Operating Procedure in 2013. Once the Data Management Standard Operating Procedure is updated, it will be provided to the Monitoring and Laboratory Division so that the Data Management Standard Operating Procedure can also be incorporated into the California Air Resources Board's Quality Management Plan or Quality Assurance Project Plan.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
- 2013 (1st Quarter): Conference Call to Districts - Current: Post-Submittal Data Review Process	Gayle Sweigert, Manager Air Quality Analysis Section

- Roles and responsibilities document to be implemented quarter 1, 2013.	

Prepared by: Gayle Sweigert
Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 4

Finding:
A few instances of erroneous continuous data were identified in the Air Quality System for California Air Resources Board sites.
Description of the Problem:
The California Air Resources Board's Air Quality Surveillance Branch validates continuous data for California Air Resources Board sites, which involves reviewing >50,000 data points per month. Data review performed during the audit identified missing data that should not have been invalidated and incorrect data that were not identified and corrected. The erroneous data were not identified by any level of review.
Actions Taken or Planned to Correct the Cause:
As stated in Technical System Audit findings, Air Quality Surveillance Branch monthly data submittals involve reviewing, editing and verifying more than 50,000 data values per month. It is conceivable that a few instances of improper data may make it to the Air Quality System. To prevent this from occurring, a Branch Policy "DOCUMENTING DATA QUALITY" dated January 29, 2003 established guidelines for data deemed to be ready for Air Quality System submittal. This document requires that each air monitoring section manager submit a monthly data memo to the Chief of the Air Quality Surveillance Branch. This memo documents that ALL data from each section has been reviewed and approved for Air Quality System submittal. This document also requires section managers to document any data that is missing, invalid or not suitable for submittal along with a justification. The Air Quality Surveillance Branch will update and reissue its existing memo "DOCUMENTING DATA QUALITY" and ensure that ALL staff and managers are following its guidelines. In addition to updating existing policies, the Air Quality Surveillance Branch is implementing the following: 1) Assign a person in each air monitoring section with the task of conducting data audits. The data audits will be conducted to screen large volumes of data (monthly/quarterly) reviews to check for outliers or unusual data. 2) Begin using data visualization tools and automatic quality control functions of the new Data Management System to enhance data reviews. 3) In conjunction with the Quality Management Branch, development and implement a comprehensive Primary Quality Assurance Organization training program.

Timetable for above Actions	**Point-of-Contact for Corrective Action**
Update and reissue Air Quality Surveillance Branch memo "Documenting Data Quality" – Jan 2013	Reggie Smith Manager, Operations and Support Section

Finding Number: DM 4

Assign staff to conduct Air Quality Surveillance Branch data audits – March 2013 Begin using data visualization tools – July 2013 Begin comprehensive Primary Quality Assurance Organization training program – Fall 2013	

Prepared by: Reggie Smith
Date: November 14th, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 5

Finding:	
Erroneous continuous data were identified in Air Quality System for non-California Air Resources Board sites within the California Air Resources Board Primary Quality Assurance Organization.	
Description of the Problem:	
Each district within the California Air Resources Board Primary Quality Assurance Organization is expected to validate its own data; however, this is not done consistently (see Findings Imperial 10, Mendocino 11, and San Joaquin Valley 10). The Environmental Protection Agency identified incorrect data being collected by local districts and submitted to the Air Quality System.	
Actions Taken or Planned to Correct the Cause:	
Similar to the findings in Data Management 2 and Data Management 3, this finding noted that erroneous data were submitted into the Air Quality System for non-California Air Resources Board sites within the California Air Resources Board Primary Quality Assurance Organization; therefore, data validation training and procedures for data validation are needed. To address this finding, as already addressed in Data Management 2 and Data Management 3, the Monitoring and Laboratory Division (MLD) is planning to conduct a formal Primary Quality Assurance Organization training for the districts within the California Air Resources Board Primary Quality Assurance Organization. Air Quality Analysis Section (AQAS) staff will also attend the relevant portions of this training. Moreover, districts will be required to use California Air Resources Board's data validation procedures, unless districts have alternative procedures that have been approved in their Quality Management Plan and/or relevant standard operating procedures.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
- Primary Quality Assurance Organization training scheduled to begin fall 2013.	Michael Miguel, Chief Quality Management Branch

Prepared by: Gayle Sweigert
Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: DM5

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 6

Finding:

[Previous Finding Data Management 6] There are numerous deficiencies in the data certification process for the California Air Resources Board Primary Quality Assurance Organization, including:

• Not all National Ambient Air Quality Standards-compliant data within the California Air Resources Board Primary Quality Assurance Organization are routinely certified.

• Data certified by the California Air Resources Board for local districts are not typically reviewed or validated.

• Data are routinely certified by agencies, but responsibility has not been formally delegated to any local agencies within the State of California.

Description of the Problem:

Numerous agencies collect, analyze, and submit regulatory ambient air monitoring data. Often the same agency does not perform all of these activities and so it is not clear which agency should certify data. Ultimate authority for certifying data rests with the State, but can be delegated to local agencies. Historically, the responsibility for certifying data has not had formal delegation. The audit revealed cases where regulatory data submitted to the Air Quality System had not been certified by any agency (see Table 3). The lack of a formal structure for data certification within the State has resulted in incomplete and inappropriate data certification with the potential to jeopardize regulatory decisions. Additionally, the California Air Resources Board submits data for ten districts within the California Air Resources Board Primary Quality Assurance Organization and certifies these data without reviewing or verifying that the district validated the data. As a result, some unvalidated, erroneous data have been certified by the California Air Resources Board and submitted to the Air Quality System.

Actions Taken or Planned to Correct the Cause:

The Environmental Protection Agency stated that there were numerous discrepancies in the data certification process and that there was a lack of a formal certification process between the California Air Resources Board and the districts. Currently, the California Air Resources Board submits all data collected at California Air Resources Board sites and most of the ambient air quality data for ten districts in California to the Air Quality System (excluding some Particulate Matter (PM2.5) Federal Reference Method data). The California Air Resources Board certifies the data for which the California Air Resources Board has Air Quality System submittal authority annually.

To improve the data certification process, the roles and responsibilities (R&R) document will be sent to all districts within the California Air Resources Board Primary Quality Assurance Organization, identifying the responsibilities of the districts in certifying its own data if they are direct data submitters. The California Air Resources Board will work with districts to ensure that they understand their responsibilities for data certification. This will include hosting a conference call with districts in the Primary Quality Assurance Organization, Environmental Protection Agency Region 9 staff and California Air Resources Board staff. In addition, Air

Finding Number: DM6

Quality Analysis staff will undertake a coordination role to ensure that all districts which have Air Quality System submittal authority certify their own data in a timely manner by contacting the districts one month prior to the certification deadline. For the ten districts for which the California Air Resources Board is the data submitter, California Air Resources Board will continue certifying the data and institute steps to improve data validation and review procedures as noted in Data Management 2 and Data Management 3. Finally, the Monitoring and Laboratory Division will work with the Environmental Protection Agency Region 9 staff to further clarify San Diego and Ventura grant responsibilities for the certification of district Particulate Matter (PM2.5) data that they analyze per contract agreement.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
- March 2013: Conference call with Districts regarding data certification - May 2013 Annual data certification - Roles and responsibilities document to be implemented quarter 1, 2013. - Primary Quality Assurance Organization training scheduled to begin fall 2013.	Gayle Sweigert, Manager, Air Quality Analysis Section

Prepared by: Gayle Sweigert
Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 7

Finding:
Data, including those for design value sites, have been changed after they are certified and subsequently not recertified.
Description of the Problem:
The Air Quality Data Branch occasionally requests changes to data, based on continued higher level analyses, after certification. The data are not recertified. Title 40, Code of Federal Regulations Part 58 requires data be certified by May 1 of each year. Since the data are considered certified, they are official, and not subject to change after submittal of the certification letter. Changing data after certification is a significant concern, as the expectation is that the data will not change and may be used for attainment and decision making purposes. Data verification should take place before upload to the Air Quality System, not after, when they may impact numerous decisions already made by several organizations. Any changes to data that occur subsequent to data certification must be recertified. Uncertified data cannot be used for regulatory decisions.
Actions Taken or Planned to Correct the Cause:
The concern is that data that is designated as "uncertified" as a result of data modifications cannot be used for regulatory findings, such as attainment determinations until it is recertified. The Air Quality Analysis Section commits to update data certification annually each May (with our certification letter). In addition, the Air Quality Data Branch will conduct a comprehensive review of data certification status prior to any upcoming regulatory finding and recertify data, as needed. As part of this process, we commit to working closely with Environmental Protection Agency staff to ensure that data recertification is completed in a timely manner. In addition, the roles and responsibilities document will provide Districts with a greater understanding of their responsibilities regarding data certification, including recertification of data in the Air Quality System.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
- May 2013: Data Certification letter, including recertification of past years data - Ongoing: recertification as needed to support specific regulatory actions - Roles and responsibilities document to be implemented quarter 1, 2013.	Gayle Sweigert

Prepared by: Gayle Sweigert

Finding Number: DM7

Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 8

Finding:

Some local districts within the California Air Resources Board's Primary Quality Assurance Organization are listed as their own Primary Quality Assurance Organization in the Air Quality System.

Description of the Problem:

The following agencies, which are within the California Air Resources Board's Primary Quality Assurance Organization, are listed as their own Primary Quality Assurance Organization in the Air Quality System:

- Great Basis Unified Air Pollution Control District
- Mendocino County Air Quality Management District
- San Joaquin Valley Unified Air Pollution Control District
- Santa Barbara County Air Pollution Control District
- Siskiyou County Air Pollution Control District
- Tehama County Air Pollution Control District

In some cases some parameters/sites for the local districts are under the California Air Resources Board's Primary Quality Assurance Organization have some parameters/sites under their own Primary Quality Assurance Organization.

Actions Taken or Planned to Correct the Cause:

In November 2012, the California Air Resources Board reviewed the list of Districts specified above in the Air Quality System and determined that Great Basin, San Joaquin, and Siskiyou correctly identified the California Air Resource Board as the Primary Quality Assurance Organization. Mendocino, Santa Barbara, and Tehama had incorrect Primary Quality Assurance Organization designations. The California Air Resources Board will contact each District identified and request appropriate updates in the Air Quality System to reflect correct Primary Quality Assurance Organization designations.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The California Air Resources Board will contact each District identified above in December 2012, and request that specified corrections be made to their Primary Quality Assurance Organization designation in the Air Quality System. The California Air Resources Board will work with identified Districts and the Environmental Protection Agency to ensure corrections are made in a timely manner.	Mike Miguel, Chief Quality Management Branch

Finding Number: DM8

Prepared by: Maria Salomon
Date: November 27, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Data Management 9

Finding:
There were several instances of the California Air Resources Board altering data collected by local districts without communicating with the district.
Description of the Problem:
The California Air Resources Board /Air Quality Analysis Section enters continuous data for ten local districts. Local districts are expected to validate their data and submit them for direct upload to the Air Quality System. The Air Quality Analysis Section runs a routine Air Quality System report that detects outliers. If any outliers are identified, Air Quality Analysis Section staff must request that the district review the outliers, and revise the data outliers if necessary. It is Air Quality Analysis Section policy, as specified in the data standard operating procedures, not to revise local district data without the district's consent. The Air Quality Analysis Section uploads continuous data for two of the districts that the Environmental Protection Agency visited during this technical system audit. Within the past year, for both districts there were instances where data had been altered without the Air Quality Analysis Section communicating with the local district.
Actions Taken or Planned to Correct the Cause:
The concern is about Air Quality Analysis Section staff altering districts' data in the Air Quality System without communicating with the district and/or not having the districts' consent to do so. This finding is already being addressed in the Air Quality Analysis Section Data Management Standard Operating Procedure (SOP). It is the Air Quality Analysis Section policy that no data in the Air Quality System database be changed or modified in any way without the consent of the district. Air Quality Analysis Section staff who handle data submittals are reminded by monthly meetings, in which data issues and problems are discussed. In addition, quarterly conference calls with districts for which Air Quality Analysis Section staff is the data submitter would be another forum to follow-up on any data problems.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Monthly meetings with Air Quality Analysis Section staff responsible for data input (ongoing)	Gayle Sweigert, Manager, Air Quality Analysis Section Section

Prepared by: Gayle Sweigert
Date: December 3, 2012

[This section to be filled out by the Environmental Protection Agency]

Finding Number: DM9

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 1

Finding:

The Quality Assurance Audit group has made an effort to improve its documentation process; however, several inconsistencies were noted.

Description of the Problem:

During the certification process for the California Air Resources Board's National Performance Audit Program, it was noted that the Quality Management Branch's performance audit group should make several improvements to its audit documentation process. These recommendations have been partially implemented through improvements to field documentation and logbooks. Several discrepancies were noted:

- The audit trailer logbook entries are incomplete and written in pencil.
- There is no indication that the trailer logbook was recently reviewed by management.
- The equipment maintenance records were not current.
- Field sheets are filled out in pencil and transferred to electronic documents. As these sheets may be maintained as official records for the data validator, they should be completed in indelible ink.

In order to ensure the data produced by the ambient air monitoring network can withstand legal challenge; documentation must be complete, definitive and sufficient to be used as evidence for the California Air Resources Board/Environmental Protection Agency's designation decisions.

Actions Taken or Planned to Correct the Cause:

In an effort to ensure conformity with section 11.2.3 of Quality Assurance Handbook Volume II Revision 1, dated December 2008, each Quality Assurance Section audit vehicle has a logbook to track general vehicle maintenance and movement of some necessary audit equipment like gas cylinders and flow audit equipment. Additionally, some audit instruments like gas analyzers and ozone generators have a separate logbook to track periodic calibration and maintenance.

Logbook entries are completed in indelible ink and initialed by the responsible staff member as maintenance is completed or changes are made and periodically reviewed by management.

Further, all field audit worksheets are completed on site using indelible ink and then transferred by the onsite audit team to electronic documents and verified by staff of the Quality Assurance Section prior to inclusion in the permanent audit file.

Quality Assurance Section staff continuously strives to compile complete and accurate documentation and appreciates any further suggestions for improvements.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Immediate and on going	Ranjit Bhullar

Finding Number: QA1

Prepared by: LaMar Mitchell
Date: 12/10/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 2

Finding:

The audit trailer evaluated was using one expired gas cylinder along with others that had not been certified annually as required for the Environmental Protection Agency's National Performance Audit Program.

Description of the Problem:

Of the gas cylinders being used in the audit van, only the high concentration multi-blend gas had been certified within the last year. The low concentration carbon monoxide cylinder had not been certified in over three years and was presumably past its certification period.
The National Performance Audit Program states that gases should be certified annually. Because the California Air Resources Board audit program performs National Performance Audit Program audits, this criterion must be met as part of the California Air Resources Board's National Performance Audit Program.

Actions Taken or Planned to Correct the Cause:

The cylinders in question were both scheduled to be recertified by the California Air Resources Board's Standards Laboratory in June, 2011 in preparation for the upcoming quarter. However, the zero-air generator in the Standards Laboratory was non-operational from February - September, 2011. Additionally, the cylinders could not be sent back to Scott-Marrin for recertification because the California Air Resources Board was prohibited from shipping any cylinders or/and other hazardous material from June - October, 2011 due to a Chemtrac licensing issue. These combined factors created a situation in which both internal and external recertification was not possible.

Tables 1 and 2 show that the cylinders have since been recertified by both the California Air Resources Board and Scott-Marrin. Recertified values for the cylinders show a drift no more then 0.07-0.50 parts per million from the original concentrations. After reviewing all gaseous audits conducted with these cylinders in Quarter 3 and Quarter 4 of 2011 and any related gaseous air quality data actions, the Quality Assurance Section has determined that no data was affected and all audits conducted using these cylinders are valid.

Table 1 – California Air Resources Board Recertification Concentration Values

Cylinder Identification	Purchase Date	Original Concentration (parts per million)	ARB Recertification Date	Recertification Concentration (parts per million)	Difference
CA03203	9/28/2009	40.1	10/7/2011	40.2	0.10
CC40113	3/4/2008	9.03	10/5/2011	9.10	0.07

Table 2 - Scott-Marrin Recertification Concentration Values (using Environmental Protection Agency Protocol)

Cylinder Identification	Purchase Date	Original Concentration (parts per million)	Scott-Marrin Recertification Date	Recertification Concentration (parts per million)	Difference
CA03203	9/28/2009	40.1	5/26/2012	40.6	0.50
CC40113	3/4/2008	9.03	5/26/2012	9.03	0.00

Several corrective action measures have been developed and implemented by the Quality Assurance Section since this time. The Quality Assurance Section has designated a certified back-up for low and high carbon monoxide, as well as superblend cylinders. These back-up cylinders will be certified concurrently with the cylinders used to conduct audits and will be made available if needed. Additionally, South Coast Air Quality Management District has offered a backup certified cylinder to the Quality Assurance Section, if necessary. Furthermore, the Quality Assurance Section now only purchases gas cylinders prepared using the Environmental Protection Agency's protocol; these mixtures are analyzed in accordance with "the Environmental Protection Agency traceability Protocol for Assay and Certification of Gaseous Calibration Standards". These combined actions will ensure that a certified audit cylinder will be available at all times.

Timetable for Above Actions	Point-of-Contact for Corrective Action
Certified backup cylinders – Annually Environmental Protection Agency Protocol Gas Cylinder – Implemented 1/2012 South Coast Cylinders – Available as needed All of the corrective action items listed above have been implemented by the Quality Assurance Section as of January, 2012.	Leena Janda Hjanda@arb.ca.gov (916) 323-1439

Prepared by:

Date:

Leena Janda

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding

Reviewed by:

Date:

Plan to address finding approved?

Remarks:

Corrective Action Completed

Reviewed by:

Date:

Was the finding adequately addressed to close the finding?

Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 3

Finding:
The Quality Assurance Section is not tracking monitors to ensure that 25% of monitors are being audited per calendar quarter.
Description of the Problem:
Actions Taken or Planned to Correct the Cause:
It is the Quality Assurance Section's objective to meet the requirements of scheduling at least 25 percent of the State and Local Air Monitoring Station's gaseous analyzer performance evaluations in each calendar quarter. To meet this objective, the Quality Assurance Section will continue to pre-schedule the State and Local Air Monitoring Station's gaseous analyzer performance evaluations prior to each calendar year. The Quality Assurance Section will evaluate the schedule to ensure that for each calendar quarter, it schedules at least 25 percent of the State and Local Air Monitoring Station's operational gaseous analyzers. Due to the existence of multiple gas analyzers at some monitoring stations, the Quality Assurance Section will prioritize the quarterly schedule of gaseous criteria pollutants in the following descending order: ozone, nitrogen oxide, carbon monoxide, and sulfur dioxide. In other words, the Quality Assurance Section's top priority will be to audit 25 percent of the State and Local Air Monitoring Station's ozone analyzers in each quarter. In so doing, the other gaseous analyzers at the same station would be audited as well, possibly creating an imbalance to the 25 percent goal for all criteria gases. The Quality Assurance Section will track its progress in meeting the scheduling requirements and make necessary adjustments. At the end of each calendar quarter the Quality Assurance Section will evaluate its progress in meeting its goal of scheduling 25 percent of the four gaseous criteria pollutants each calendar quarter.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Immediate and on going	Chris Deidrick

Prepared by: Chris Deidrick
Date: December 6, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:

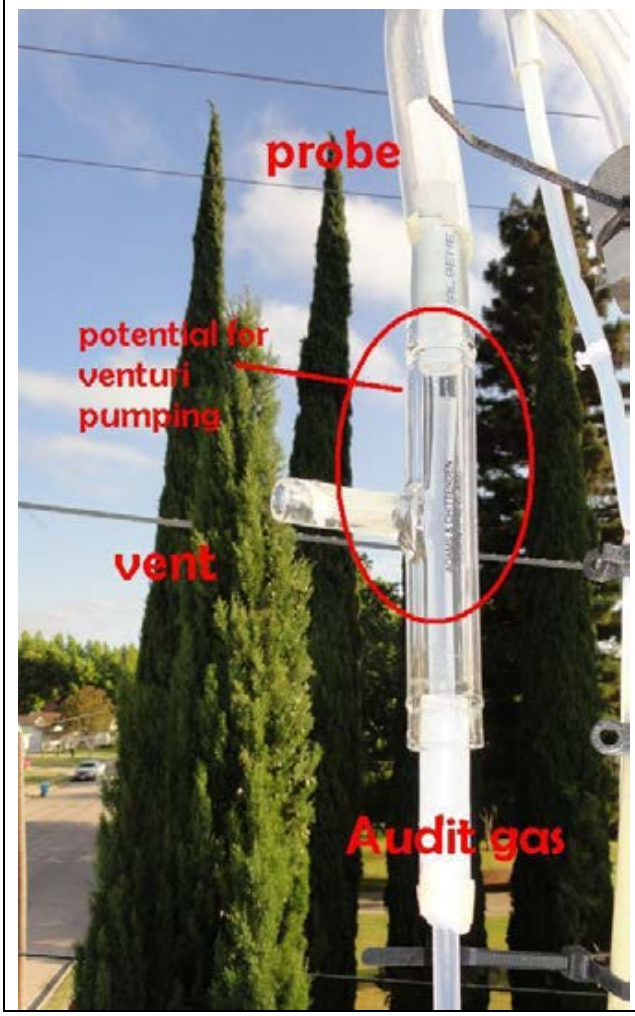
Finding Number: QA3

Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 4

Finding:
The connection to the inlet on the audit trailer could pull in outdoor air.
Description of the Problem:
The probe connection being used by the Quality Assurance Section might be creating a Venturi effect, bringing in outdoor air. When the diameter or size of a tube or pipe is increased there is a resulting pressure drop that can overcome the inherent pressure differential and cause a Venturi effect that may overcome excess system pressure. By reconfiguring the design of the inlet attachment, the possibility of bringing in outdoor air can be significantly reduced. Note that excess flow from the vent should always be verified.   

Actions Taken or Planned to Correct the Cause:

While the possibility of Venturi pumping exists as a result of the connection between the audit van and station probe, the Quality Assurance Section is not aware of an occurrence necessitating the reconfiguration of the inlet hardware (glass tee). Moreover, the probe connection utilizing the current glass tee design conforms with the Environmental Protection Agency guidelines for preventing the entrainment of outside air (ref: section 5, step 7.3, National Performance Evaluation Program Through the Probe, Revision 0, dated November 11, 2005). In accordance with these guidelines the tube from the probe is sized to slide into the pipe of the glass tee, thereby reducing the diameter of the line. The glass tee procedure is the most versatile due to all the different probe configurations that the Quality Assurance Section experiences in the field.

To further ensure that ambient air is not introduced, the Quality Assurance Section has implemented a procedure to verify that during initial hook up and prior to disconnecting, there is greater than 1 liter per minute flow through the bypass of the glass tee. The flow is measured with a rotometer and recorded on the Quality Assurance Audit Worksheet [MLD/QAS-013 (Rev. 6/5/12)]. The possibility of air mixing is eliminated when positive flow through the bypass vent is noted both before and after each audit.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Completed	Laura Niles

Prepared by: Laura Niles
Date: December 7, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 5

Finding:	
Auditors do not review all applicable siting information in the Air Quality System prior to an audit.	
Description of the Problem:	
It was found that the global positioning system coordinates for the site where the audit program was reviewed were incorrect in the Air Quality System. The Quality Assurance Section was unaware of this discrepancy as staff had not evaluated the accuracy of the Air Quality System's siting information. Because the Air Quality System is the repository of official information on each monitoring site and the information is used by the Environmental Protection Agency to make regulatory decisions and in research studies, it should be periodically verified.	
Actions Taken or Planned to Correct the Cause:	
Prior to a performance audit, Quality Assurance Section staff contacts the site agency to inquire if the site information contained in the Air Quality System is accurate and up-to-date. During audits, Quality Assurance Section staff compares the actual site information including global positioning system coordinates, to the information contained in the Air Quality System. Discrepancies are noted on the quality assurance audit worksheet and included in the comment section of the permanent audit report. The appropriate agency is advised to make changes to the Air Quality System.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Implemented	LaMar Mitchell

Prepared by: LaMar Mitchell
Date: 12/10/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:
Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 6

Finding:

[Previous findings Major Finding 4 & Operations Planning and Assessment 2] Quality assurance for special projects is not developed in a process consistent with Environmental Protection Agency quality system requirements.

Description of the Problem:

When the Environmental Protection Agency grant funds are used by the California Air Resources Board to collect environmental data, or when data are used to support an Environmental Protection Agency regulatory decision, data collection and use must be covered by a quality system that meets Environmental Protection Agency requirements.
The Monitoring and Laboratory Division does not have oversight authority for monitoring projects that are conducted entirely or initiated by other California Air Resources Board Divisions or California Air Districts. The quality assurance planning and implementation for these projects is generally not transparent to the Monitoring and Laboratory Division or the Environmental Protection Agency.
The Air Quality Surveillance Branch does implement quality assurance planning for special projects where the Monitoring and Laboratory Division plays a significant role. These projects may or may not include planning and implementation review by the Quality Management Branch.

Actions Taken or Planned to Correct the Cause:

The California Air Resources Board intends to expand the scope of its quality assurance oversight of special projects when data are used or can be used to support Environmental Protection Agency regulatory decisions. The California Air Resources Board will include a policy statement in the Quality Management Plan to ensure that special projects include the necessary quality assurance elements to ensure that data are suitable for their intended use. The California Air Resources Board plans to make quality assurance a standing agenda item at various forums (i.e., California Air Pollution Control Officers Association Air Monitoring Meeting, Quality Assurance Conference Call, Air Monitoring Technical Advisory Committee, training) to determine what special projects agencies are planning and that essential quality assurance practices are included (see Corrective Action Form - Finding Number General 6 for additional forums of communication).

The California Air Resources Board currently performs technical system audits of local air district ambient air monitoring programs, including special purpose monitoring projects, within the California Air Resources Board Primary Quality Assurance Organization. The California Air Resources Board is also deploying its Corrective Action Notification process which will enhance the corrective action process in Special Purpose Monitoring programs.

Finding Number: QA6

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
-The Corrective Action Notification process is expected to be implemented by the end of January 2013. -The Quality Management Plan is expected to be finalized and approved by the end of June 2013. -Communication outreach is ongoing.	Michael Miguel, Chief Quality Management Branch

Prepared by: Greg Gilani
Date: 12/7/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Quality Assurance 7

Finding:
Mass flow elements are used to establish calibration points outside of their calibrated range.
Description of the Problem:
The factory calibration range for the mass flow elements for the BGI Tetracal devices goes down to 1.8 standard liters per minute. However, the lowest calibration point used in this calibration is 0.2 standard liters per minute. While this is significantly below the calibrated range, the mass flow element's linear range should extend well below this flow rate. Mass flow elements should be calibrated below 0.2 standard liters per minute, so that stability of the standard is objectively measured across its linear range.
Actions Taken or Planned to Correct the Cause:
The Standards Laboratory has purchased and employed a Molbloc-s (Sonic Nozzle) flow standard to address this issue. The calibration points can now be checked down to 0.1 standard liters per minute.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Molbloc-s in use as of March 2012	Robert Russell: 916-322-0216

Prepared by: Robert Russell
Date: December 12, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Particulate Matter 1

Finding:

Communication of post-weigh information and transmission of documentation to local districts should be improved.

Description of the Problem:

The Particulate Matter Laboratory supports filter weighing operations for a number of districts throughout California. Some agencies have indicated that post-weigh Particulate Matter data have not always been transmitted in a timely fashion. Communication of Particulate Matter data to local districts should be considered time critical, especially when there are exceedances of the standard.

Actions Taken or Planned to Correct the Cause:

- For the Particulate Matter (PM 2.5) program, one of the obstacles for timely submittal of data to the Air Quality System was that the analyst did not know if all of the trip blanks had been received back into the laboratory. We have implemented a new protocol for trip blanks within the laboratory that accurately tracks how many trip blanks we have in the field for a certain month and which sites they were sent to.
- Another problem that contributed to data submittals to Air Quality System being delayed was that filters were not being received in a timely manner from the field after sampling. Our Laboratory Information Management Systems coordinator has created a program which automatically emails a list of filters that have been sampled greater than 10 days past and have not been received into the laboratory. This list is distributed via email to California Air Resources Board Monitoring management.
- A 45 day turn-around-time has been implemented by the laboratory supervisor.
- For Particulate Matter, sometimes, it takes longer time to get all sampling questions answered from Mexico sites. However, it is improving with constant reminders via emails to meet deadlines. If delayed more than 30 days, all California site data is uploaded to the Air Quality System with amendments for Mexico.
- After monthly report submission, it goes through a review process. The monthly report is peer reviewed and signed off, then by the lead person, supervisor and finally the branch Chief approves it. Subsequently, it is sent for submittal to Air Quality System, this review/approval process is part of the 45-day turn-around-time.
- Currently Inorganics Laboratory Staff staff contact site operators directly when issues arise that require make-up samples to be run, or to clarify information to validate a sample at log-in. This provides immediate communication to the field staff.
- The Monitoring and Laboratory Division's Quality Management Branch is initiating a Corrective Action Notification program to track systematic network problems as well.

Finding Number: PM 1

Timetable for Above Actions	Point-of-Contact for Corrective Action
Above actions have already been implemented.	Michael Werst

Prepared by: Inorganics Laboratory Section Management and Staff
Date: December 6, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Particulate Matter 2

Finding:
The Particulate Matter Laboratory does not have a formal corrective action process for addressing issues with Particulate Matter filter collection.
Description of the Problem:
Currently, the existing corrective action process for California Air Resources Board is limited to the Quality Management Branch performance audit program and Standards Laboratory calibration services. A similar process should be applied to the Particulate Matter Laboratory. The Particulate Matter Laboratory supports filter weighing operations for a number of districts throughout California and often receives filters that have been damaged or deemed invalid due to other operational issues (i.e. filters received after required weighing period). Currently, these issues are communicated informally via email or phone call conversations. Due to the recurring nature of these issues, which result in data loss, the Particulate Matter Laboratory should develop a mechanism to minimize these losses through a corrective action process.
Actions Taken or Planned to Correct the Cause:
- To address the concern of late samples, our Laboratory Information Management Systems coordinator has created a program which automatically emails a list of filters that have been sampled greater than 10 days past and have not been received into the laboratory. This list is distributed via email to California Air Resources Board Monitoring management. - A 'Sample Handling Improvement Team' has been established in order to improve communication between the laboratory and field staff. - Currently, the Inorganics Laboratory Section staff contact site operators directly when issues arise that require make-up samples to be run, or to clarify information to validate a sample at log-in. This provides immediate communication to the field staff. - The Monitoring and Laboratory Division's Quality Management Branch is initiating a Corrective Action Notification program to track systematic network problems as well.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Above actions have already been implemented.	Michael Werst

Prepared by: Inorganics Laboratory Section Management and Staff
Date: December 6, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding

Finding Number: PM 2

Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Particulate Matter 3

Finding:
Documentation of activities in the Particulate Matter (PM 10) and Particulate Matter (PM 2.5) laboratories should be improved.
Description of the Problem:
Although the majority of activities in the Particulate Matter Laboratory are adequately tracked and documented, there are some areas where improvements should be made. Specific examples include: • The Particulate Matter (PM 10) Laboratory does not maintain a general laboratory logbook. • Expiration and replacement of electrostatic strips are not documented. • Post-weigh conditioning times are noted on post-it notes and not formally documented. • Honeywell charts are primary records that are accompanied by a digital Dickson logger, but Relative Humidity/Temperature are not transferred or tracked in the Laboratory Information Management System. • Post-it notes are placed on archived Honeywell charts when Relative Humidity/Temperature goes out of specification and is not formally documented. • Temperature of the refrigerator used for cold storage of filters is not documented. • Removal of filters from cold storage is not documented.
Actions Taken or Planned to Correct the Cause:
- Electrostatic strips are replaced annually. Replacement dates will now be recorded in the laboratory logbooks. - Post-weigh conditioning times are noted on the chain of custody form. Pre-weight conditioning times are noted on post-it notes only so that we can be sure to use the oldest ones first. During our last lot blank determination it was shown that equilibration of pre-conditioning filters occurs within 24 hours. - Relative Humidity/Temperature data is transferred to Particulate Matter along with the daily calibrations, but this is only one data point. A real-time temperature/Relative Humidity sensor that is web-based has been installed in each Particulate Matter balance room. Once fully operational, these recorders will provide a digital record of balance room conditions. - A record of Temperature/Relative Humidity fluctuations outside of specifications will now be kept in the laboratory logbooks in each Particulate Matter lab. - The temperature of the refrigerator used for cold storage of filters is not currently being documented. A digital thermometer will be purchased and placed into this refrigerator. A temperature log will be attached to the refrigerator door and filled out by staff at least once per week. - Removal of Particulate Matter (PM 2.5) filters from cold storage during the one-year period that they are required to be cold only occurs when staff is verifying a mass value. When this occurs it is documented on the chain of custody form for that sample. We do

not document when the filters are moved to non-refrigerated storage due to this always occurring well past the one-year time requirement. Filters are typically stored in the refrigerator for 2-3 years.

- Per recommendations, the Particulate Matter (PM 10) Laboratory now formally documents any changes that take place in a formal log book along with all calibrations records for the year. Whenever the Temperature or Relative Humidity go out of specification or ink pen is being replaced for being too light to read, or any maintenance is noted in the log book with time and date along with using post-it notes for archived charts.
- Pre weigh conditioning time and date is still noted on post-it notes to assure that we weigh the oldest filter set first after the minimum 24-hour equilibration requirement is met.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Implemented now; temperature probe purchase submitted.	Michael Werst

Prepared by: Inorganics Laboratory Section Management and Staff
Date: December 6, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Particulate Matter 4

Finding:	
Particulate Matter (PM 10) trip blanks are not being used to assess potential bias from filter transport and handling.	
Description of the Problem:	
Trip blanks controls are useful in assessing potential contamination of filters from transport and laboratory handling.	
Actions Taken or Planned to Correct the Cause: Northern Laboratory Branch will provide trip blanks for each Particulate Matter (PM 10) air monitoring station. Each Particulate Matter (PM 10) site will receive one trip blank per year; the trip blanks will be sent to 25% of the Particulate Matter (PM 10) air monitoring stations each quarter. Since the referenced document associated with the finding does not specify criteria for Particulate Matter (PM 10) filters, after one year Northern Laboratory Branch will evaluate the Particulate Matter (PM 10) trip blank data and make recommendations.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Trip blanks will be provided by second quarter 2013. Evaluation will occur after one year.	Michael Werst

Prepared by: Inorganics Laboratory Staff Management and Staff
Date: December 6, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 1

Finding:	
The canister cleaning standard operating procedure does not reflect the current cleaning procedure.	
Description of the Problem:	
The number of cleaning cycles for a newly acquired cleaning system has been reduced from nine, as stated in the standard operating procedure, to five. Staff stated the standard operating procedure is being re-written. Standard operating procedures document an agency's official policies and procedures to which staff should adhere to obtain consistent and reliable data. They are required as part of an agency's approved Quality Assurance Project Plan. Standard operating procedures are used in training staff in agency accepted analytical methodology and help demonstrate data defensibility.	
Actions Taken or Planned to Correct the Cause:	
A new standard operating procedure is being written to address the procedures for canister cleaning with the new Toxic Organic (TO) - Clean system.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend current standard operating procedure or create new standard operating procedure for Toxic Organic (TO) - Clean system. Submit to management for review by Jan. 31, 2013.	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov. 16, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:

Finding Number: TL1

Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 2

Finding:	
A standard operating procedure is not documented for the batch certification of cleaned canisters. The canister cleaning standard operating procedure lists cleaning criteria for the Monitoring and Laboratory Division 058 method, but not for the Monitoring and Laboratory Division 066 method.	
Description of the Problem:	
California Air Resources Board staff stated that current criteria are documented in the Quality Assurance Manual, but not in the standard operating procedure It is unclear why there are different cleaning criteria for the two methods. Refer to previous finding.	
Actions Taken or Planned to Correct the Cause:	
The canister cleaning standard operating procedure will be amended to include procedures and criteria for certifying clean canisters. The criteria for each method were previously based on reporting limits for each compound.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend canister cleaning standard operating procedure and submit to management for review by Jan. 31, 2013	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov. 16, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 3

Finding:	
The batch certification of cleaned canisters described by staff for methods Monitoring and Laboratory Division 058 and Monitoring and Laboratory Division 066 differs from existing Volatile Organic Compound guidance.	
Description of the Problem:	
Photochemical Assessment Monitoring Stations guidance recommends that one cleaned canister out of eight be certified and Method Toxic Organic - 15, on which these methods are based, recommends certifying every canister. California Air Resources Board currently tests one cleaned canister of twelve for residual contamination as part of the certification process. Batch certification can identify excessively dirty canisters or a malfunction of the cleaning system during the cleaning cycle, but may be inadequate to certify that every canister in a batch is actually clean. Analyzing one out of twelve instead of eight canisters introduces even greater uncertainty. The uncertainty increases if the dirtiest canister in a batch is not selected as the certification canister.	
Actions Taken or Planned to Correct the Cause:	
California Air Resources Board will continue to test one in twelve canisters cleaned. Tests have been conducted to show this is sufficient. The Environmental Protection Agency National Air Toxics Trends Stations Technical Assistance Document is also being amended to recommend that 1 of 12 is sufficient.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
None	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov. 16, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:

Finding Number: TL3

Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 4

Finding:	
[Related to Previous Finding Organics Laboratory 19]. Pre-cleaning concentrations are not recorded in a logbook to allow for the selection of the most highly contaminated canister for batch certification.	
Description of the Problem:	
Canisters are randomly selected for certification. As a result of a finding from the previous Technical System Audit, the California Air Resources Board has initiated a system of marking canisters that have been selected for testing as part of the batch certification to ensure that eventually all canisters are tested. Certifying the canister with the most highly contaminated sample concentrations during batch certification in accordance with guidance would provide a higher level of confidence that the entire batch of canisters has been effectively cleaned.	
Actions Taken or Planned to Correct the Cause:	
As the Organics Laboratory Section only analyzes ambient air samples we rarely see "highly contaminated" canisters. We will prioritize any canisters with high concentrations for use as batch certification otherwise we will continue to select random cans for certification, choosing first the ones that have not previously been used for batch certification. This procedure will be documented in the standard operating procedure.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Include in amended standard operating procedure to be submitted to management for review by Jan. 31, 2013.	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov. 16, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed

Finding Number: TL4

Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 5

Finding:	
Canisters are not routinely leak tested as prescribed in guidance. Instead, canisters are vacuum leak tested only when gross leaks are suspected.	
Description of the Problem:	
Canisters can become contaminated over time from leaks and micro leaks, which are not obvious from monitoring canister gauge readings. Method Toxic Organic -15, on which methods Monitoring and Laboratory Division 066 and Monitoring and Laboratory Division 058 are based, describes the process for leak testing canisters in Section 8.4.1.1 and establishes a criterion of +2 psig, beyond which the pressure should not vary. Canisters may also become contaminated over time through micro leaks. The Photochemical Assessment Monitoring Stations Technical Assistance Document, Section 2.5.3.6, states that "…obvious leaks may be checked by submerging canisters in water, but to check for micro leaks, the canister should be evacuated and its pressure observed for several days with a sensitive absolute pressure gauge connected."	
Actions Taken or Planned to Correct the Cause:	
The California Air Resources Board will continue to monitor all cans held at vacuum when cleaned and further test for leaks if the vacuum fails to hold constant while waiting to be sent out for sampling. Pressure readings are recorded at various times prior to use both in the lab and in the field. If pressure does not remain constant canisters are not shipped to field sites nor used for sampling. Any canister that does not hold pressure is checked for leaks and repaired or disposed.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend standard operating procedure and submit to management for review by Jan. 31, 2013	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov. 16, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:

Finding Number: TL5

Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 6

Finding:	
[Previous Finding Organics Laboratory 21]. A retention time policy for re-cleaning and blanking canisters once they have been certified clean has not been established.	
Description of the Problem:	
The Canister Custodian confirmed that she observes reappearance of contamination in cleaned canisters over time. Canisters may become contaminated over time through small leaks or micro leaks that may not be obvious from monitoring canister gauge readings (see Description, Finding 5). Additionally, the Photochemical Assessment Monitoring Stations Technical Assistance Document, Section 2.5.3.2 states that "… canisters may appear uncontaminated immediately after cleaning, but will out-gas contaminants upon storage for several weeks. All canisters in use should be blanked checked frequently and particularly after extended periods of storage, to ensure that significant contamination do not appear." Environmental Protection Agency observed probable out-gassed contaminants from canister surfaces in a recent Photochemical Assessment Monitoring Stations Performance Evaluation Study of Air District laboratories conducted by the Region 9 Quality Assurance Office.	
Actions Taken or Planned to Correct the Cause:	
California Air Resources Board will track canister cleaning dates and rotate canisters for sampling appropriately to ensure they are used in a timely manner. If a canister has not been used within four weeks of cleaning it will be tested for cleanliness.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend standard operating procedure and submit to management for review by Jan. 31, 2013	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov 16, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed

Finding Number: TL6

Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 7

Finding:	
The California Air Resources Board standard operating procedure states that old canisters are reconditioned, but this is inconsistently practiced.	
Description of the Problem:	
Staff stated that the reconditioning procedure was determined to be ineffective and has been discontinued. Similar information was presented at the 2011 Air Conference in Dallas, Texas. A procedure for reconditioning based on best available information does not currently exist.	
Actions Taken or Planned to Correct the Cause:	
Remove section on reconditioning from the standard operating procedure.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by Jan. 31, 2013	Judy Hodgkins

Prepared by: Judy Hodgkins
Date: Nov. 16, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 8

Finding:	
California Air Resources Board has not established a holding time for cartridges once samples have been collected for extraction or analysis.	
Description of the Problem:	
Cartridges are kept for some weeks in the field before shipping them to the laboratory. Staff stated that cartridges are generally analyzed within the four weeks recommended by the cartridge vendor (Waters), but not within 14 days as specified in Determination of Toxic Organic Compounds in Ambient Air Method TO-11 or 30 days following extraction specified in the method. Exceeding method prescribed holding times can result in data being qualified due to potential loss of sample or a risk of contamination from extraneous sources, even under refrigeration. Exceeding prescribed method holding times can result in data that are more vulnerable to challenge.	
Actions Taken or Planned to Correct the Cause:	
A team has been formed to address shipping and receiving sampling media and samples. Tracking cartridges is currently being done to record holding times from shipping to sampling, sampling to laboratory receipt, sampling to extraction, and extraction to analysis. The Organics Laboratory Section will work with the Air Quality Surveillance Branch and districts to have cartridges retrieved and shipped to the laboratory in a timely manner in order to get samples extracted within the expected 14 day hold time. Currently samples are extracted within 7 days of receipt. Field protocols will be amended with regard to cold storage and holding times for cartridge use. The analysis of extracts within 30 days of extraction has been accomplished.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Work with the Air Quality Surveillance Branch to amend field protocols and submit to management for review by February 28, 2013.	John Medina

Prepared by: John Medina
Date: 2012 NOV 16

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?

Finding Number: TL8

Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 9

Finding:
The laboratory does not assign expiration dates to new sampling cartridges and allows cartridges to be used beyond the 90 days prescribed by the method.
Description of the Problem:
Determination of Toxic Organic Compounds in Ambient Air Method TO-11 states in its discussion of the preparation of 2,4-Dinitrophenylhydrazine cartridges "that cartridges will maintain their integrity for up to 90 days stored in refrigerated, capped shipping tubes" (Determination of Toxic Organic Compounds in Ambient Air Method TO-11 note, sec. 9.5.2.16). Initial blank lot concentrations are provided with commercially purchased cartridges. Given the significant concern expressed throughout Determination of Toxic Organic Compounds in Ambient Air Method TO-11 over potential laboratory contamination, it is prudent to be alert to potential contamination during storage. One of the air districts assigns a six month expiration date to cartridges. A commercial laboratory (Atmospheric Analysis and Consulting Laboratory, Ventura, CA) confirmed that it routinely monitors and observes that blank concentrations increase over time, although not past criteria levels. The level of contamination will depend on how the cartridges are stored and if they become exposed to contaminants. Therefore, unused cartridge lots are probably best recertified for quality assurance documentation purposes after 90 days, as suggested by guidance.
Actions Taken or Planned to Correct the Cause:
The 2,4-Dinitrophenylhydrazine cartridge manufacturer, WATERS, indicates that the 2,4-Dinitrophenylhydrazine -Silica cartridges are stable for 6 months when stored at 4 degrees Celsius. WATERS also suggests the cartridges may be used beyond 6 months if blank criteria are met. A change in the standard operating procedure to verify cartridge lot recertification at 90 days and longer will be put into place. Tracking cartridges is being done to ensure cartridges are not held in the field or used past 90 days.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend standard operating procedure and submit to management for review by February 28, 2013	John Medina

Prepared by: John Medina
Date: 2012 NOV 16

[This section to be filled out by the Environmental Protection Agency]

Finding Number: TL9

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 10

Finding:	
The California Air Resources Board's procedure for analyzing lot blanks differs from the standard operating procedure.	
Description of the Problem:	
The standard operating procedure states that 5% of new 2,4-Dinitrophenylhydrazine cartridges will be analyzed as lot blanks. Staff stated the practice has been changed to one cartridge per lot rather than one per box. The standard operating procedure should be updated to reflect current practice. Standard operating procedures document an agency's official policies and procedures that staff are to adhere to obtain consistent and reliable data and are required as part of an agency's approved Quality Assurance Project Plan as required by a Title 40, Code of Federal Regulations, Part 58, Appendix A.	
Actions Taken or Planned to Correct the Cause:	
The current standard operating procedure is being updated to conform to current practices.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by February 28, 2013	John Medina

Prepared by: John Medina
Date: 2012 NOV 16

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: TL10

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 11

Finding:	
No criterion is provided in the California Air Resources Board standard operating procedure for passing 2, 4-Dinitrophenylhydrazine lot cartridge blanks.	
Description of the Problem:	
Carbonyl Method Determination of Toxic Organic Compounds in Ambient Air Method TO-11 prescribes acceptance criteria for lot blanks of less than 0.15 microgram/cartridge (formaldehyde) and less than 0.10 microgram/cartridge (acetaldehyde). The standard operating procedure should be consistent with practice. Furthermore, the criterion used by the California Air Resources Board of 2 times the reporting limit is not appropriate. The reporting limit must be higher than the blank contamination.	
Actions Taken or Planned to Correct the Cause:	
The current standard operating procedures will be updated to include "Certificate of Analysis" that meets Determination of Toxic Organic Compounds in Ambient Air Method TO-11A criteria for cartridge blanks. The current criteria used by the California Air Resources Board of 2 times the reporting limit will no longer be used. The verification of cartridge lot and extraction set blanks will be tracked and reported to the Laboratory Information Management System.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by February 28, 2013. Amend the Laboratory Information Management System following the standard operating procedure finalization.	John Medina, LAB

Prepared by: John Medina
Date: 2012 NOV 16

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed

Finding Number: TL11

Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory12

Finding:	
Gloves are not worn as a contamination protection measure when handling cartridges. A nitrogen-purged glove bag is not used for extractions.	
Description of the Problem:	
Determination of Toxic Organic Compounds in Ambient Air Method TO-11 cautions against the unintentional contamination of eluted samples due to aldehyde and ketone contamination in laboratory air, inks, adhesives, packaging, and vials with plastic caps. The use of gloves is prescribed when handling the cartridges. Extracting the cartridges in a nitrogen-purged glove further reduces the risk of contamination. Food and drink residue on hands can also present a contamination problem, in addition to safety issues related to working with acetonitrile without proper protection. The use of a glove box will vary with the laboratory air environment; working in a very clean hood may be sufficient.	
Actions Taken or Planned to Correct the Cause:	
The handling of sample cartridges using gloves is and has always been the practice of the laboratory. The laboratory is a carbonyl free room with high ventilation. The laboratory hood is brand new (installed 2012) and is kept in a high state of cleanliness. Laboratory extraction blanks are monitored for background contamination.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Completed	John Medina

Prepared by: John Medina
Date: 2012 NOV 29

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 13

Finding:	
[Previous Finding Organics Laboratory 3] Staff stated that field blanks are not being analyzed at a frequency of 10% of field samples, as specified in Determination of Toxic Organic Compounds in Ambient Air Method Method TO-11, nor is there a standard operating procedure describing the procedure for the submission of field blanks.	
Description of the Problem:	
During the previous Technical System Audit, staff stated that the California Air Resources Board was correcting sample results based on an average of field blank results from a study performed 15 years prior. The study was outdated and sample results should not be corrected. During the current Technical System Audit, staff stated that sample results are no longer being subtracted, but that field blanks are not being collected as prescribed in the method. Field blanks increase the level of confidence that sample contamination detected is not from extraneous sources.	
Actions Taken or Planned to Correct the Cause:	
The current standard operating procedure is being updated to meet requirements of Determination of Toxic Organic Compounds in Ambient Air Method TO-11a regarding field blank samples. The laboratory is working with field sampling staff to meet the criteria of Determination of Toxic Organic Compounds in Ambient Air Method TO-11a requirements for National Air Toxics Trends Stations.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by February 28, 2013. Notify field staff of field blank requirements and implement shipment and analysis of field blanks by after the standard operating procedure finalization.	John Medina

Prepared by: John Medina
Date: November 29, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed

Finding Number: TL13

Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory14

Finding:	
California Air Resources Board does not analyze trip blanks when needed.	
Description of the Problem:	
Determination of Toxic Organic Compounds in Ambient Air Method Method TO-11 states that it is desirable to collect trip blanks at a frequency of 10% of field samples. In addition to field blanks and laboratory blanks, if field blank analysis show contamination, trip blanks should be collected and analyzed to distinguish between sources of contamination.	
Actions Taken or Planned to Correct the Cause:	
The standard operating procedure will be updated to address trip blanks and field blanks to be collected and analyzed at a frequency of 10% as stated in Determination of Toxic Organic Compounds in Ambient Air Method TO-11a.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by Feb. 28, 2013. Notify field staff of trip blank requirements, and implement shipping and analysis of trip blanks once the standard operating procedure is finalized.	John Medina

Prepared by: John Medina
Date: 2012 NOV 29

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: TL14

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 15

Finding:	
Determination of Toxic Organic Compounds in Ambient Air Method Method TO-11 states that samples should be re-analyzed when results are 10% above the criterion, but the analyst was not aware of this criterion**.**	
Description of the Problem:	
Up-to-date standard operating procedures help train analysts new to accepted laboratory procedures. Having analysts' initial standard operating procedures annually to indicate that they have read the standard operating procedures and have had an opportunity to discuss them with their supervisor is also valuable. Some laboratories administer a written test to qualify an analyst to perform a new method. Keeping charts of the duplicate results with control lines indicating the criterion can ensure that laboratory quality control criteria are given adequate attention at the time of analysis.	
Actions Taken or Planned to Correct the Cause:	
The current standard operating procedure is being updated to address these criteria. Samples with results that are above 10% of the calibrated curve will be diluted and reanalyzed. The laboratory has updated it procedures to include control charts that are current and accessible to chemists.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by February 28, 2013	John Medina

Prepared by: John Medina
Date: 2012 NOV 29

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Finding Number: TL15

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Laboratory 16

Finding:	
Working standards are tracked and used for six months, while the California Air Resources Board standard operating procedure states that standards should be retained for four months under refrigeration.	
Description of the Problem:	
Periodic reviews by the supervisor of logbooks and internal audits or reviews by a Quality Assurance Officer would help ensure that replacement schedules are kept. Using expired standards can result in inaccurate data and legal challenges.	
Actions Taken or Planned to Correct the Cause:	
The standard operating procedure will be amended to reflect acceptable use lifetime of all stock standards and working standards used for Monitoring and Laboratory Division Standard Operating Procedure No. 022.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend the standard operating procedure and submit to management for review by February 28, 2013	John Medina

Prepared by: John Medina
Date: 2012 NOV 29

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Lab 17

Finding:	
Site name and sampling dates are recorded on a piece of tape loosely stuck to sample cartridges; the tape occasionally falls off, making it difficult to identify samples.	
Description of the Problem:	
A better system for labeling samples is needed to increase confidence that a data point is appropriately identified with a particular sample.	
Actions Taken or Planned to Correct the Cause:	
Each cartridge has a tracking number printed on it that is referenced on the chain of custody (COC) form and the sampler data tape (this is the "tape" referenced in finding). The shipping logbook maintains a record of which cartridges are shipped to each site. When the samples are received at the lab the numbers are confirmed to match (tracking number on cartridge/on chain of custody /on sampler tape vs. site name and sampling date) as well as confirming the field data from the sampler tape to the chain of custody. Volumetric flasks used during sample extraction have an etched identification number that is assigned to a cartridge identification number which are recorded in a logbook for cross reference. There are several verifications done on each sample and cross references that document each sample from each site. The verification procedures will be added to standard operating procedures.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend standard operating procedures and submit to management for review by February 28, 2013	John Medina

Prepared by: John Medina
Date: 2012 November 29

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: TL17

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Lab 19

Finding:	
[Previous Finding Organic Lab 5] There is no secondary review of logbooks.	
Description of the Problem:	
Secondary review of logbooks by supervisory or quality assurance staff can help ensure that proper protocol is being followed.	
Actions Taken or Planned to Correct the Cause:	
Data is reviewed by way of a monthly report submitted to management. This report contains copies of all logbook pages added within the month for both laboratory work and instrument maintenance. This practice has been in place since being notified via Organics Lab 5 in the previous technical system audit.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Completed	John Medina

Prepared by: John Medina
Date: 2012 November 29

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Lab 20

Finding:
The California Air Resources Board does not analyze audit samples or through-the-probe audit samples as suggested in Section 9.7 of the California Air Resources Board standard operating procedures.
Description of the Problem:
Audit samples are an important quality assurance tool to ensure the accuracy of analytical data. Through-the-probe audits help document that the sample and analysis system are within acceptable control limits. Staff stated that the standard operating procedures to analyze audit samples had been followed in the past, and have requested that this be reinstituted.
Actions Taken or Planned to Correct the Cause:
The Quality Assurance Section of Monitoring and Laboratory Division performs an audits/ performance sample program annually to verify the accuracy of the sample handling and analysis procedures used for the Volatile Organic Compound analysis (Monitoring and Laboratory Division-058). The audit program includes a Toxics Laboratory Audit Sample using a National Institute of Standards and Technology-certified multi-component gaseous standard. The Toxic Laboratory Audit program samples are prepared by Quality Assurance Section staff using a Standards and Technology certified gaseous standard to fill summa canisters provided by the laboratory. Samples are provided to the laboratory as blind samples which are analyzed according to their standard operating procedure. Sample results are evaluated against the certified values provided by Standards and Technology. Investigation and corrective action is required for any analyte found to be outside of the California Air Resources Board Laboratory Audit Limits. The California Air Resources Board has investigated possible commercially available sources of audit samples for Volatile Organic Compound analysis but has been able to identify an audit samples that include the primary analytes at appropriate concentrations to be representative of ambient air concentrations. The California Air Resources Board is planning to participate in the Environmental Protection Agency National Air Toxics Trends Stations audit program for the Volatile Organic Compound analysis in 2013. The California Air Resources Board no longer performs the through-the-probe performance audits for the Volatile Organic Compound analysis. This section of the standard operating procedures will be removed in the next revision.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
- Toxics Laboratory Audit program is already implemented and on-going. - The California Air Resources Board will participate in the National Air	Mike Miguel- Chief Quality Management Branch Monitoring and Laboratory Division.

Toxics Trends Stations Volatile Organic Compound audit program starting in 2013.	

Prepared by: Patrick Rainey
Date: 12/5/12

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Toxics Lab 21

Finding:	
Appendix V in the California Air Resources Board standard operating procedures lists the standards that were used in 2003 and has not been updated to reflect the standards currently being used.	
Description of the Problem:	
Staff stated current standards are found in the quality control report. Outdated information in an standard operating procedures can lead to misunderstanding in practice and would represent a vulnerability if data are challenged. Standard operating procedures should be updated to reflect practice.	
Actions Taken or Planned to Correct the Cause:	
The standard operating procedures will be updated to remove reference to a specific standard. The standard operating procedures will state the process in which standards are obtained and expiration of working standards.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Amend standard operating procedures and submit to management for review by February 28, 2013	John Medina

Prepared by: John Medina
Date: 2012 November 30

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board - Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 1

Finding:	
Imperial County Air Pollution Control District ambient air monitoring program is not operating under an approved Quality Assurance Project Plan.	
Cause of the Problem:	
The Environmental Protection Agency requires that organizations develop a Quality Assurance Project Plan for each type of ambient pollutant being measured. The Quality Assurance Project Plan integrates all technical and quality aspects of a project, including planning, implementation, and assessment. The purpose of the Quality Assurance Project Plan is to document planning results for environmental data operations and to provide a project-specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use. The Quality Assurance Project Plan documents the quality assurance and quality control that are applied to an environmental data operation to assure the results are of the type and quality needed and expected.	
Actions Taken or Planned to Correct the Cause:	
A draft agency specific Quality Assurance Project Plan has been completed. The Air District will review the California Air Resources Board draft Quality Management Plan when it becomes available. The possibility of formal adoption of the California Air Resources Board Quality Management Plan and Quality Assurance Project Plan has not been discussed at this time but will be part of the final evaluation.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Draft version for review to California Air Resources Board by March 2013. Draft version for review to the Environmental Protection Agency by end of May 2013. Final version summer 2013.	Monica N. Soucier – Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: IMP 1

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board– Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 2

Finding:

Imperial County Air Pollution Control District has not established an appropriate quality system for ambient air monitoring.

Cause of the Problem:

A quality system is the means by which an organization manages the quality of the monitoring information it produces in a systematic, organized manner. It provides a framework for planning, implementing, assessing and reporting work performed by an organization and for carrying out required quality assurance and quality control activities. While the monitoring staff at Imperial County Air Pollution Control District is very knowledgeable and operates the ambient air monitoring network diligently, the lack of a structured quality system is needed to effectively and appropriately implement ambient air monitoring requirements. Major components of a quality system include:

- Independence of Quality Assurance
- Quality Management Plans and Quality Assurance Project Plans
- Data Quality Performance Requirements (Data Quality Objectives)
- Quality Assurance/Quality Control activities

Actions Taken or Planned to Correct the Cause:

Until recently actual monitoring staff consisted of one technician responsible for all aspects of quality assurance/quality control activities. Reassignment of additional staff has been instituted to provide for reporting, planning and implementation of monitoring activities. Imperial County Air Pollution Control District is in process of developing a Quality Management Plan/Quality Assurance Project Plan. The Quality Management Plan/Quality Assurance Project Plan describes the quality system currently in place reflecting, the independence of quality assurance and the Data Quality Objectives. The Imperial County Air Pollution Control has reassigned duties and functions from the top managerial levels to the monitoring level assuring primary and secondary levels of review, corrective action and assurance that quality assurance/quality control is in line with Data Quality Objectives. As part of that process the development and/or modification of California Air Resources Board forms, standard operating procedures have been implemented and are currently in use by staff.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Procedures and forms have been instituted – a Draft Quality Management Plan/Quality Assurance Project Plan should be ready for California Air Resources Board review by	Monica N. Soucier – Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

March 2013 and a Draft Quality Management Plan/Quality Assurance Project Plan should be ready for Environmental Protection Agency review by May 2013 with a Final by summer of 2013	

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board - Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 3

Finding:

Assessment of Particulate Matter (PM 10) or Particulate Matter (PM 2.5) sampling frequency throughout the Imperial County Air Pollution Control District network has not been performed as required.

Cause of the Problem:

The minimum required monitoring schedules for Particulate Matter (PM 10) in the area of expected maximum concentration should be based on the relative level of that monitoring site concentration with respect to the 24-hour standard, as illustrated in Figure 1 of Title 40, Code of Federal Regulations Part 58.12. The most recent year of data must be considered to estimate the air quality status at the site near the area of maximum concentration no less frequently than as part of each 5-year network assessment.

For Particulate Matter (PM 2.5), required sites that meet the following criteria are required to sample at a 1-in-3 day sampling frequency:

- Design value sites that are within ±10% of the National Ambient Air Quality Standards
- Sites where one or more 24-hour values have exceeded the National Ambient Air Quality Standards each year for a consecutive period of at least 3 years.

In addition, required design value sites that are within 5% of the National Ambient Air Quality Standards must maintain an everyday sample schedule.

The Environmental Protection Agency may not be able to make attainment determinations from site where appropriate sampling frequency is not achieved.

Actions Taken or Planned to Correct the Cause:

Imperial County Air Pollution Control District has performed the assessment as required under Title 40, Code of Federal Regulations Part 28.12 (e), Title 40, Code of Federal Regulations Part 58.12 (d)(ii) and (iii). The analysis indicates both Calexico-Ethel and Brawley are required to do continuous monitoring.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Draft assessment finalized and ready for review November 2012 – Final assessment and submittal to the California Air Resources Board by December 2012. Anticipated final for the Environmental Protection Agency January 2013.	Monica N. Soucier – Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Finding Number: IMP 3

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 4

Finding:
Neighborhood scale may be inappropriate for Particulate Matter (PM 10) at the Westmorland site.
Cause of the Problem:
The area surrounding the Westmorland monitoring site is mostly residential surrounded by active agricultural fields, but is located on the Westmorland Wastewater Treatment property and may be influenced by local activity and not representative of a neighborhood spatial scale for Particulate Matter (PM 10). The area directly adjacent to the monitoring site is mainly comprised of unpaved areas that are disturbed by vehicle traffic and heavy equipment. Due to similar surface conditions throughout the area, the Particulate Matter monitor is appropriately sited, but may be more appropriately characterized as having a middle scale of representation. Neighborhood scale defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometer range. The neighborhood and urban scales listed below have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants, while middle scale defines the concentrations typical of areas up to several city blocks in size with dimensions ranging from about 100 meter to 0.5 kilometer.
Actions Taken or Planned to Correct the Cause:
The most recent Annual Network Plan identifies Westmorland station for Ozone as representative of a Regional Scale while for Particulate Matter (PM 10) as representative of a Middle Scale. This same information was provided to California Air Resources Board (Primary Quality Assurance Organization) as a metadata update in the Air Quality System.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Submitted Metadata information for the Air Quality System on October 23, 2012 to the California Air Resources Board and included revision in the latest Annual Network Plan submitted to the Environmental Protection Agency for review.	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Finding Number: IMP 4

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 5

Finding:

One-point flow rate verifications for Particulate Matter (PM 10) and Particulate Matter (PM 2.5) are not performed by the Imperial County Air Pollution Control District as required and are not well documented.

Cause of the Problem:

The Imperial County Air Pollution Control District has not purchased flow rate transfer standards, and therefore the monitoring staff does not perform one-point flow rate verifications as required. Currently, a nearby California Air Resources Board site operator, responsible for the Calexico Ethel monitoring site, performs all flow rate verifications on an "as needed" basis. Based on the available documentation at the monitoring sites, these checks have been missed in the past and have not been well documented. Many records were outdated or incomplete. Also, flow rate transfer standard certification records are not maintained by the Imperial County Air Pollution Control District. Due to a lack of consistent documentation, it is unclear when flow rate verifications have been performed and whether the flow rate transfer standard used to perform the checks has been certified relative to an authoritative standard as required.

A one-point low rate verification check must be performed at least once every month on each automated analyzer used to measure Particulate Matter (PM 10) and Particulate Matter (PM 2.5). For Imperial County Air Pollution Control District, these should be performed monthly on the Particulate Matter (PM 10) Beta Attenuation Model 1020, which are operating at Niland and Brawley and filter based Particulate Matter monitors at El Centro. The same issues are present for high-volume Particulate Matter (PM 10) samplers, which are required to have one-point flow rate verifications performed on a quarterly basis.

Actions Taken or Planned to Correct the Cause:

Imperial County Air Pollution Control District acquired a Delta Cal transfer standard, found a Particulate Matter (PM 10) flow orifice in storage and has had them certified using the Monitoring and Laboratory Division's standards laboratory. Training by California Air Resources Board personnel was provided to the Imperial County Air Pollution Control District on use and maintenance. As of October 2012 the Imperial County Air Pollution Control District began flow audits of all Particulate Matter samplers within the Imperial County network. All flow rate verifications, certifications are recorded on standardized forms and kept at each station for recordkeeping purposes.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Implemented internal flow audits as of October 2012. Forms were updated and are art of quality assurance/quality control procedures	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606

now in place.	monicasoucier@co.imperial.ca.us

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 6

Finding:
Residence time for gaseous monitors operated by Imperial County Air Pollution Control District is not established.
Cause of the Problem:
The residence time is defined as the amount of time that it takes for a sample of air to travel from the opening of the cane to the inlet of the instrument. Title 40, Code of Federal Regulations Part 58, Appendix E Section 9 states that for the reactive gases (Ozone, Nitrogen Dioxide, and Sulfur Dioxide) residence time must be less than 20 seconds. Additionally, it is recommended that the residence time within the manifold and sample lines to the instruments should be less than 10 seconds. The station technicians should calculate the residence time, document it in the station logbook, and periodically verify the data. There was not a clear record of residence time of the sampling lines at each site. Also, the site operators did not know how recently the residence time had been recalculated. At a minimum, the residence time should be calculated for each instrument after any change is made to the sampling train, such as the removal or addition of other instruments, and posted at each site. The station technicians should calculate the residence time, document it in the station logbook or other form available at the site, and periodically verify the data.
Actions Taken or Planned to Correct the Cause:
Beginning on October 15, 2012 trial calculations for residence time for Ozone and Nitrogen Dioxide commenced. The California Air Resources Board's Monitoring and Laboratory Division staff (Fred and Adolfo from the Monitoring and Laboratory Division in El Monte) provided the equations necessary for onsite technicians to conduct the necessary calculations. As a consequence, Imperial County Air Pollution Control District staff (Jon Barroga) developed a spreadsheet to calculate the measurements. In addition, the California Air Resources Board calculates and verifies the residence time for each monitoring station as part of the annual through the probe audit. Calculated residence time is included on each California Air Resources Board audit report.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Imperial County Air Pollution Control District trial entry of maintaining calculated recordings and tracking was on October 15, 2012. Imperial County Air Pollution Control District official entry of maintaining calculated recordings and tracking was today November 29, 2012.	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Finding Number: IMP 6

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 7

Finding:	
Imperial County Air Pollution Control District is internally post weighing high volume Particulate Matter (PM 10) filters without proper Particulate Matter lab or quality control measures.	
Cause of the Problem:	
Traditionally, all high volume Particulate Matter filters are processed and weighed by California Air Resources Board in appropriately controlled environmental and necessary quality control and quality assurance techniques. The Imperial County Air Pollution Control District stated that often the post-weigh information is not transmitted back to the Imperial County Air Pollution Control District from the California Air Resources Board in a timely manner. As a result, Imperial County Air Pollution Control District has implemented a post-weigh procedure for Particulate Matter (PM 10) high-volume filters in order to get a preliminary assessment of whether the samplers are measuring exceedances of the standard, so that the appropriate planning actions and preparation can occur immediately after the sample has been collected. These preliminary post-weighing procedures are not performed in a controlled environment nor do they follow the required quality control procedures. Furthermore, the weighing and subsequent handling of these filters prior to the official California Air Resources Board post-weigh may introduce bias in the sample.	
Actions Taken or Planned to Correct the Cause:	
Post weighing of Particulate Matter (PM 10) filters has been discontinued.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
June 2011 completed.	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?

Finding Number: IMP 7

Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 8

Finding:
Documentation of Imperial County Air Pollution Control District air monitoring activities is not complete.
Cause of the Problem:
Accurate and complete documentation is essential to the collection of air quality data used for regulatory purposes. Appropriate documentation includes, but is not limited to, standard operating procedures for all aspects of an organization's program, data quality assessments, logbooks tracking actual day-to-day operations, and records of quality control, quality assurance, and maintenance checks. Oversight of personnel and activities involved in the collection, processing and submittal of data is facilitated by procedures that are standardized and responsible personnel record their compliance with these procedures. Currently, the Imperial County Air Pollution Control District does not have a formal or consistent process for documenting air quality monitoring activities. For example, many records are maintained on loose-leaf paper or post-it notes (instrument maintenance records, Particulate Matter 10 make-up sample dates, Particulate Matter (PM 10) motor repair, and notes on changes made to the data in the database). Many records or entries in logbooks are made in pencil, not initialed, and were limited in information or specificity. In response to a data tracking request, documentation of flow rate verifications and calibrations of Particulate Matter (PM 10) analyzers could not be located, and documentation supporting data invalidation was not present.
Actions Taken or Planned to Correct the Cause:
Imperial County Air Pollution Control District now has bound logbooks in each station. Each logbook contains all day to day activities. Additionally, each station now has binders for each instrument. The binders contain information for monthly quality control checklists, repair logs and audit reports. The most recent month, or working forms are maintained on clipboards. All entries are in pen and not pencil.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Remedied August 2012.	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Finding Number: IMP 8

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 9

Finding:
There are potential siting issues at the Calexico Ethel site.
Cause of the Problem:
The Calexico Ethel monitoring site is located in the parking lot of a high school in a mostly residential area. The primary concern is the distance of the monitoring site to nearby trees. Trees can act as obstructions in cases where they are located between the air pollutant sources or source area and the monitoring site, and where the trees are of a sufficient height and leaf canopy density to interfere with the normal airflow around the probe, inlet, or monitoring path. The scavenging effect of trees is greater for Ozone than for other criteria pollutants and monitoring agencies must take steps to consider the impact of trees on Ozone monitoring sites. To reduce the potential interference/obstruction, the probe or inlet must be at least 10 meters or further from the drip line of trees. Other potential issues include monitor spacing on the roof and the distance of the collocated Particulate Matter (PM 2.5) monitors to the trailer. Generally, the distance from the obstacle to the probe, inlet, or monitoring path must be at least twice the height that the obstacle protrudes above the probe or inlet.
Actions Taken or Planned to Correct the Cause:
Consensus reached between all agencies for site relocation of Calexico Ethel. In the interim, the California Air Resources Board has moved the two Particulate Matter (PM 2.5) monitors to the rooftop. However, this still leaves the issue of the trees as a concern. In any event, both the Air District and the California Air Resources Board are working to have the Calexico Ethel station moved north of the current location.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Moved Particulate Matter (PM 2.5) monitors to roof top September/October of 2012. Draft Letter of Intent sent by the Air District to the California Air Resources Board to assume operations of the relocated Calexico Station. District/California Air Resources Board ongoing discussions on site operations.	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

Finding Number: IMP 9

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board – Imperial County Air Pollution Control District
Audit Date: Summer 2011
Finding Number: Imperial 10

Finding:
Imperial County Air Pollution Control District is not adequately reviewing and editing data.
Cause of the Problem:
The current database does not allow staff to adequately review and edit data. WinCollect data management system must be manually edited due to proprietary software issues, unable to assign flags as locally necessary. For example, the data system can only automatically assign one flag (AY: "Quality Control Points") to the raw data. As a result, monitoring staff must manually edit hourly test files to make any adjustments. This process introduces the potential for errors in the data and reduces monitoring staff's ability to effectively review and edit data appropriately. Imperial County Air Pollution Control District would benefit from data validation training.
Actions Taken or Planned to Correct the Cause:
Agilaire 8832 data loggers and Air vision software have been ordered to replace the existing Ecotech loggers/software. Installation and training has been set up with Agilaire staff for January 2013. The California Air Pollution Control Officers Association has recently announced a tentative training schedule for data validation which Imperial County Air Pollution Control District staff intend to take advantage of.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
New data acquisition system, storage and processing to be installed January 22-25, 2013. Pending actual dates for data validation training.	Monica N. Soucier-Air Pollution Control Division Manager (760) 482-4606 monicasoucier@co.imperial.ca.us

Prepared by: Jon Barroga, Air Pollution Control Monitoring Technician (reviewed by Monica N. Soucier Air Pollution Control Division Manager)
Date: November 7, 2013

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: IMP 10

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 1

Finding:
Mendocino County Air Quality Management District staff was not familiar with the California Air Resources Board Quality Management Plan or instrument standard operating procedures.
Description of the Problem:
Staff appeared to be trained and proficient with the procedures that are used to conduct his monitoring activities. However, it was noted that this training and/or demonstration of proficiency was not adequately documented. Mendocino County Air Quality Management District staff stated that the district operates under California Air Resources Board's Quality Management Plan and standard operating procedures. The staff was not aware where electronic or hard copies of the Quality Management Plan and standard operating procedures could be found. Although the staff was not able to find these documents when the Environmental Protection Agency was on site, they were later located in Mendocino County Air Quality Management District files and accessible online. Mendocino County Air Quality Management District noted that California Air Resources Board's standard operating procedures are not entirely relevant to the Mendocino County Air Quality Management District sites since they refer to different data acquisition systems that are not used by Mendocino County Air Quality Management District.
Actions Taken or Planned to Correct the Cause:
California Air Resources Board monitoring web sites are bookmarked on District computers and standard operating procedures downloaded or accessed as needed for field work. As noted in the Finding Description, staff is proficient with procedures used to conduct monitoring activities. Despite limited resources and numerous non-monitoring related duties, district staff takes advantage of training opportunities provided by the California Air Resources Board and equipment vendors as time and resources allow.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
N/A	R. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:

Finding Number: MEN1

Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 2

Finding:	
The Mendocino County Air Quality Management District has been part of the California Air Resources Board's Primary Quality Assurance Organization since Primary Quality Assurance Organizations were created in 2006 but is erroneously listed as its own Primary Quality Assurance Organization in the Air Quality System.	
Description of the Problem:	
Title 40, Code of Federal Regulations, Part 58.1 defines a Primary Quality Assurance Organization as "a monitoring organization or other organization that is responsible for a set of stations that monitor the same pollutant and for which data quality assessments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station in the State and Local Air Monitoring Stations and Special Purpose Monitor networks must be associated with one, and only one, primary quality assurance organization." Many requirements specified in Title 40, Code of Federal Regulations, Part 58, such as those for collocation, quality assurance project plans, quality management plan, and audits, are determined on the Primary Quality Assurance Organization's basis. The Mendocino County Air Quality Management District is part of the California Air Resources Board's Primary Quality Assurance Organization, not its own Primary Quality Assurance Organization.	
Actions Taken or Planned to Correct the Cause:	
The California Air Resources Board has corrected the entry in the Air Quality System since the audit.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Completed	Pheng Lee - California Air Resources Board

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: MEN2

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

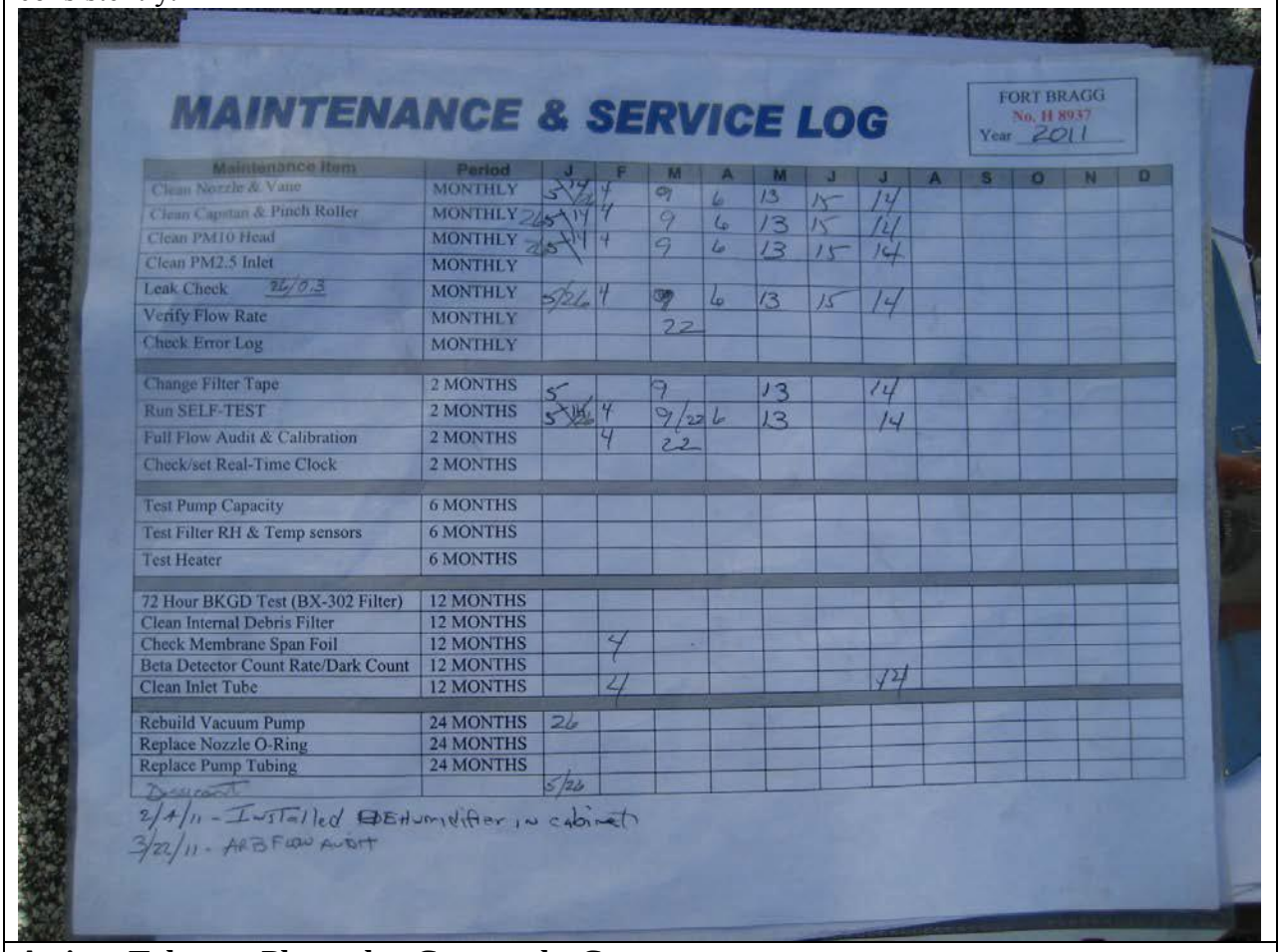
Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 4

Finding:

One-point quality control checks (flow verifications) for particulate matter (PM10 and 2.5) are not consistently performed by the Mendocino County Air Quality Management District's site operator.

Description of the Problem:

Mendocino site operators maintain "Maintenance and Service Log" sheets at each particulate matter (PM10 and 2.5) site. These include a line for monthly flow rate verifications. These are not regularly notated as having occurred (see photo below). The Mendocino County Air Quality Management District indicated that resource constraints prevent this requirement from being met consistently.



MAINTENANCE & SERVICE LOG

FORT BRAGG
No. H 8937
Year 2011

Maintenance Item	Period	J	F	M	A	M	J	J	A	S	O	N	D
Clean Nozzle & Vane	MONTHLY	5	4	9	6	13	15	14					
Clean Capstan & Pinch Roller	MONTHLY		4	9	6	13	15	14					
Clean PM10 Head	MONTHLY		4	9	6	13	15	14					
Clean PM2.5 Inlet	MONTHLY												
Leak Check 36/0.3	MONTHLY	5/26	4	9	6	13	15	14					
Verify Flow Rate	MONTHLY			22									
Check Error Log	MONTHLY												
Change Filter Tape	2 MONTHS	5		9		13		14					
Run SELF-TEST	2 MONTHS	5	4	9/22	6	13		14					
Full Flow Audit & Calibration	2 MONTHS		4	22									
Check/set Real-Time Clock	2 MONTHS												
Test Pump Capacity	6 MONTHS												
Test Filter RH & Temp sensors	6 MONTHS												
Test Heater	6 MONTHS												
72 Hour BKGD Test (BX-302 Filter)	12 MONTHS												
Clean Internal Debris Filter	12 MONTHS												
Check Membrane Span Foil	12 MONTHS		4										
Beta Detector Count Rate/Dark Count	12 MONTHS												
Clean Inlet Tube	12 MONTHS		4					14					
Rebuild Vacuum Pump	24 MONTHS	26											
Replace Nozzle O-Ring	24 MONTHS												
Replace Pump Tubing	24 MONTHS												
Desiccant		5/26											

2/4/11 - Installed DEHumidifier in cabinet
3/22/11 - AFB Flow Audit

Actions Taken or Planned to Correct the Cause:

While resource constraints continue, the Mendocino County Air Quality Management District has made strides to ensure flow rate verifications have been conducted monthly on a more

consistent basis. Re-alignment or rescheduling of some duties has allowed for flow verifications to be conducted each month so far during the current year. District personnel will attempt to continue this pattern.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
On-going	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 5

Finding:	
The Mendocino County Air Quality Management District's logbook entries are not consistently made and are not consistently in the most defensible form. Handwritten notes are occasionally illegible due to water (rain) marks.	
Description of the Problem:	
Logbooks should be in the form of bound log books with numbered pages and all entries initialed and made in indelible ink. Corrections should be made by drawing a single line through the information, initialing and dating. Information such as instrument down times should be included.	
Actions Taken or Planned to Correct the Cause:	
Recently upgraded software is utilized to collect data from all remote stations and record/log information pertaining to the equipment being monitored. The data is backed up and archived daily. Site logs are single page and identified as to the specific equipment serial number as well as the year. These logs are maintained at the remote sites to record specific information until replaced with a new yearly maintenance log. The information is then archived in binders specific to the equipment. Due to the remote and exposed nature of District monitoring locations, the possibility of water marks due to inclement weather remain and therefore make bound log books impractical. Efforts will be made to ensure the site logs remain as legible as possible given unpredictable weather conditions.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
On-going.	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 12/3/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: MEN5

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 6

Finding:
Residence time calculations were not available at the Ukiah Gobbi site.
Description of the Problem:
The residence time is defined as the amount of time that it takes for a sample of air to travel from the opening of the cane to the inlet of the instrument. Title 40, Code of Federal Regulations, Part 58, Appendix E, Section 9 states that for the reactive gases (sulfur dioxide, ozone, nitrogen dioxide) residence times must be less than 20 seconds. Additionally, it is recommended that the residence time within the manifold and sample lines to the instruments should be less than 10 seconds. The station technician should calculate the residence time, document it in the station logbook, and periodically verify the data. There was not a clear record of residence time of the sampling lines at the Gobbi site. The site operator did not know how recently the residence time had been recalculated. At a minimum, the residence time should be calculated for the instrument after any change is made to the sampling train, such as the removal or addition of other instruments, and posted at each site. The station technician should calculate the residence time, document it in the station logbook or other form available at the site, and periodically verify the data (e.g., annually).
Actions Taken or Planned to Correct the Cause:
Residence time was calculated and written in station log but not posted in view of the ozone monitor sampling piping. Residence time has been recalculated and posted on the wall near the sampling manifold. Verified by the California Air Resources Board's auditing staff during site audit in 2012.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Completed	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: MEN6

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 7

Finding:	
Trees at the Ukiah Gobbi and Ukiah Library sites should be evaluated against siting requirements.	
Description of the Problem:	
Title 40, Code of Federal Regulations, Part 58, Appendix E, Section 5 states "trees can provide surfaces for sulfur dioxide, ozone, nitrogen dioxide adsorption or reactions, and surfaces for particle deposition . . . to reduce this possible interference/obstruction, the probe, inlet, or at least 90 percent of the monitoring path must be at least 10 meters from the drip line of trees." The tree drip line at Gobbi is coming close to the 10 meters distance. The trees at the Library site appeared to meet siting requirements at the time of the Technical System Audit, but should be monitored over time.	
Actions Taken or Planned to Correct the Cause:	
The trees near the Gobbi street monitoring site were cut down and removed by the property owner shortly after the Technical System Audit. Trees at the Library site were not interfering with monitoring activities but City maintenance personnel have trimmed the lower branches closest to the monitor away from the roof line of the building as requested by the District. The City has indicated they are not willing to remove the trees from the Library sidewalk but will attempt to keep them trimmed.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Completed	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: MEN7

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 8

Finding:	
The internal shelter thermostat is not operating correctly at the Ukiah Gobbi site and has not been addressed to provide defensible data.	
Description of the Problem:	
The Ukiah Gobbi site operator determined that the internal shelter temperature is off by 4°F, and is manually correcting the data. The issue and correction have not been formally documented.	
Actions Taken or Planned to Correct the Cause:	
The room thermostat has and continues to operate correctly. The trailer temperature monitoring probe, which is an independent device from the thermostat, delivers readings directly to the data collection software. When compared to a certified standard, the device indicated a room temperature that was consistently 4^{o}F lower than the certified standard. The data collection software was adjusted to compensate for the difference and ensure continuous accurate temperatures are recorded and maintained. There is no interaction between the thermostat and the room temperature probe. Documentation of the software adjustment was entered into the station log. No manual adjustments are made, room thermostat is operating correctly and no data corrections are necessary.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
N/A	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 9

Finding:	
The Mendocino County Air Quality Management District has no system for tracking and controlling station and instrument logbooks.	
Description of the Problem:	
Field procedures require that logbooks be kept. However, these logbooks were not tracked, identified, and archived in a manner to ensure that the critical documentation they contain will be accessible and defensible.	
Actions Taken or Planned to Correct the Cause:	
Please refer to response and timetable for Finding Number: Mendocino 5.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 12/4/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 10

Finding:

The Mendocino County Air Quality Management District should have formalized training requirements for all air monitoring staff.

Description of the Problem:

The Mendocino County Air Quality Management District makes an effort to participate in trainings when opportunities arise. However, there is no formal program to ensure that staff are trained on procedures and demonstrate proficiency on tasks directly related to their job functions.

The Quality Assurance Handbook, Section 4 discusses the need for a formalized training program. The Environmental Protection Agency recognizes that funding is limited and it is often difficult to send people to trainings. Developing a formalized training program can help agencies identify what trainings are needed, what the highest priority issues are, and what resources are available. If it is not possible to fulfill the training need immediately, the training plan allows agencies to look for future funding or other opportunities.

The Environmental Protection Agency also encourages agencies to formalize and document on-the-job trainings. Trainings could be given by staff to provide common understanding and competency and minimize future problems and questions. In-house trainings could include information on the Envista program; training for site operators, data users, and data validators on the Air Quality System flags and why they are important; new quality assurance project plans/standard operating procedures; training; data validation and analysis; instrument operation and maintenance training.

The Mendocino County Air Quality Management District should coordinate with the California Air Resources Board on trainings.

Actions Taken or Planned to Correct the Cause:

Despite limited funding and resources to support the air monitoring activities, District management and staff work together to complete the monitoring duties and conduct training as necessary. On-the-job training is performed by experienced District personnel for any new staff or new procedures implemented by the District. District staff also take advantage of the training opportunities provided by the California Air Resources Board and vendors, as resources and timing allows.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
N/A	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 11

Finding:	
The Mendocino County Air Quality Management District does not provide the California Air Resources Board's Air Quality Assurance Section with datasets that have been fully quality assured and ready for upload to the Air Quality System.	
Description of the Problem:	
The Mendocino County Air Quality Management District was unable to account for some data in the Air Quality System. For example, instances were observed where the Air Quality System was missing a data point, or had a value when the County showed a span check with no associated value. The Mendocino County Air Quality Management District gives the California Air Resources Board an Air Quality System-formatted file with e-mailed notes. The local agency leaves it to the California Air Resources Board's discretion whether the e-mailed notes should result in flagged data. There is no standard operating procedure for conducting data review and validation, and data are not checked after they are sent to the California Air Resources Board for entry into the Air Quality System.	
Actions Taken or Planned to Correct the Cause:	
Upgraded reporting software supplies information directly to the California Air Resources Board in format ready for upload. Data is backed up and archived daily.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
Software updated September, 2012.	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Finding Number: MEN11

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: Mendocino 12

Finding:
The Mendocino County Air Quality Management District does not use a formal corrective action system.
Description of the Problem:
Mendocino County Air Quality Management District staff does a considerable amount of troubleshooting. But information as to what the initial problem was, when the issue was first noted, what steps were taken to resolve the issue, and when it was resolved is not consistently recorded and is kept in different locations. The Environmental Protection Agency's Quality Management Standards (EPA QA/R-2, Quality Improvement Section) require that management and staff "ensure that conditions adverse to quality are" prevented, identified promptly, fully defined, corrected, prevented from recurring, and documented as corrective actions which are tracked to closure. There is a corrective action process for the performance audit program. There should also be a formal, documented mechanism for elevating potentially significant corrective actions originating from the laboratory staff or field operators.
Actions Taken or Planned to Correct the Cause:
The District logs trouble-shooting information for specific instruments in the appropriate binder assigned to that instrument. The binders are being developed to include all pertinent information for the instrument including manuals, standard operating procedures and maintenance logs. The District will review and evaluate the corrective action notification process recently developed by the California Air Resources Board to document issues and resolution. The District may adopt this process or develop a similar process for documentation of quality related issues.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
On-going	R. A. Scaglione

Prepared by: R. A. Scaglione
Date: 11/9/2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:

Finding Number: MEN12

Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:
Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 2

Finding:

The San Joaquin Valley Air Pollution Control District does not have updated quality system documentation for all activities.

Description of the Problem:

A quality system is the means by which an organization manages the quality of the monitoring information it produces in a systematic, organized manner. It provides a framework for planning implementing, assessing and reporting work performed by an organization and for carrying out required quality assurance and quality control activities. While the monitoring staff at the San Joaquin Valley Air Pollution Control District is very knowledgeable and operates the ambient air monitoring network diligently, the lack of a structured quality system reduces its ability to implement ambient air monitoring requirements effectively and appropriately. Major components of a quality system include:

- Independence of quality assurance.
- A quality management plan, quality assurance project plans and standard operating procedures.
- Data quality performance requirements (data quality objectives).
- Quality assurance/quality control activities.

Actions Taken or Planned to Correct the Cause:

The District is in the process of implementing a more rigorous quality assurance program and plans to do so through the adoption and update of focused standard operating procedures and/or California Air Resources Board quality system documentation. This will be done in an effort to standardize not only programmatic procedures, but also the training regimen for all field technicians.

The District will review and adopt the California Air Resources Board's current Quality Management Plan; once revisions have been completed and approved, the District will take action to adopt the newest version or make revisions where necessary to best represent the District's operation.

The District will also review other air district's data quality objectives and quality assurance project plans, revise where applicable and adopt those that best represent the District's operation. The following actions will be taken to correct these matters:

Actions	Due Date
1) Identify and prioritize the necessary standard operating procedures	Jan. 31, 2013
2) Review the California Air Resources Board and District's standard operating procedures/data quality objectives/quality assurance project plans	End of 1st Quarter 2013

3) Adopt the California Air Resources Board or other District's standard operating procedures/data quality objectives/quality assurance project plans that match the Districts operation	End of 2nd Quarter 2013
4) Develop new standard operating procedures or amend existing standard operating procedures/data quality objectives to meet remaining documentation needs	End of 4th Quarter 2013

To further emphasize the District's commitment to achieving these actions - the District plans to add a senior level staff position to provide oversight and review of these projects to meet the established timetable.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The adoption/updating/crafting of standard operating procedures and other required documents will be completed by the end of 4th Quarter 2013.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 3

Finding:	
The San Joaquin Valley Air Pollution Control District has experienced significant data loss at required monitoring sites, including sites critical for demonstrating compliance with the National Ambient Air Quality Standards.	
Description of the Problem:	
There have been several recent examples of significant data loss due to downtime for temporary site closures for repairs and site relocations, including the Corcoran and Bakersfield-Golden State Highway sites. The upgrades were necessary for safety and long-term longevity of a station, and the site relocations in question were largely driven by circumstances beyond the San Joaquin Valley Air Pollution Control District's control. However, these modifications could be implemented in a manner that would minimize the amount of data loss, including better communication or the construction of temporary sites to cover data collection during site closure.	
Actions Taken or Planned to Correct the Cause:	
The District commits to minimizing data loss due to downtime for temporary closures and relocations where possible. However, although the District acknowledges that there were long periods of data loss associated Bakersfield–Golden State and the Corcoran monitoring sites; these issues were beyond the control of the District, and unfortunately, despite its best efforts, resulted in extended periods of data loss. Notwithstanding, the District is aware of the effects associated with data loss, and will effectively facilitate these types of projects/activities in the future to minimize the impact on data availability – including the evaluation of a temporary monitoring solution. The District will also commit to keeping the Environmental Protection Agency better informed of temporary site closures and relocations through written communications specific to the event.	
Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The District has implemented this corrective action.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: SJV3

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 4

Finding:
The San Joaquin Valley Air Pollution Control District has initiated network modifications for several required sites without seeking the Environmental Protection Agency's approval as required by Title 40, Code of Federal Regulations, Part 58.14.
Description of the Problem:
Monitoring agencies are required per Title 40, Code of Federal Regulations, Part 58.14 to seek the Environmental Protection Agency's approval for network modifications, including site closure or relocation. The San Joaquin Valley Air Pollution Control District has often informally communicated network changes but has not always followed the formal process as required by Title 40, Code of Federal Regulations, Part 58.14. The request submitted to the Environmental Protection Agency must address how the criteria in Title 40, Code of Federal Regulations Part 58.14 are met. Early communication between agencies is particularly crucial for high concentration or design value sites in order to develop acceptable plans for concurrent monitoring at the old and new sites in order to meet future data needs.
Actions Taken or Planned to Correct the Cause:
The District commits to meet Title 40, Code of Federal Regulations, Part 58.14 requirements by formally seeking approval of network modifications by the Regional Administrator in network plans as required by that section. In addition to informally keeping Environmental Protection Agency staff informed of status changes to the network by e-mail or by phone, the District commits to sending a formal letter to the Regional Administrator notifying him or her that a temporary shutdown or relocation process is about to commence. The District also reserves the ability to seek approval outside of a temporary site shutdown or a site relocation outside of the Network Plan process by formal letter when circumstances occur unexpectedly and require quick action on both the District's and the Environmental Protection Agency's part.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The District will implement this corrective action immediately upon approval of the Environmental Protection Agency.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

Finding Number: SJV4

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 5

Finding:
The residence time of flow between the inlet and each instrument was not posted at each San Joaquin Valley Air Pollution Control District site.
Description of the Problem:
The residence time is defined as the amount of time that it takes for a sample of air to travel from the opening of the cane to the inlet of the instrument. Title 40, Code of Federal Regulations, Part 58, Appendix E, Section 9 states that for the reactive gases (ozone, nitrogen dioxide, and sulfur dioxide) residence times must be less than 20 seconds. Additionally, it is recommended that the residence time within the manifold and sample lines to the instruments should be less than 10 seconds. The station technicians should calculate the residence time, document it in the station logbook, and periodically verify the data. There was not a clear record of residence time of the sampling lines at each site. Also, the site operators did not know how recently the residence time had been recalculated. At a minimum, the residence time should be calculated for each instrument after any change is made to the sampling train, such as the removal or addition of other instruments, and posted at each site. The station technicians should calculate the residence time, document it in the station logbook or other form available at the site, and periodically verify the data.
Actions Taken or Planned to Correct the Cause:
The residence time of a sample from the inlet to each instrument will be measured as prescribed by Title 40, Code of Federal Regulations, Part 58, Appendix E, Section 9. Once determined, the residence times will be recorded in the station log at each site, where applicable. These measurements will be re-established once a quarter or more frequently as required by the applicable sections of Title 40, Code of Federal Regulations, Part 58, Appendix E.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The District will implement this corrective action by the end of 1st Quarter 2013.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Finding Number: SJV5

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 6

Finding:

Some San Joaquin Valley Air Pollution Control District's site logbooks lacked specific information about the date or type of maintenance performed on an instrument.

Description of the Problem:

In general, documentation should show data are of adequate quality, as well as any related unusual circumstances. Documentation of the activities occurring at monitoring stations should be consistent throughout the network and should, at a minimum, include all repairs, calibrations, audits, or other maintenance performed. Maintaining complete logbooks will help to develop a comprehensive history of the station. This will aid field technicians pinpoint and assess problems that may arise with the station and provide important information for data validation.

Overall documentation at sites was generally thorough; however, more specifics should be included in logbooks at the site. For example, an entry noting that maintenance was performed on a certain date should identify the instrument and either what specific activities were performed or where that information can be found. Currently, the San Joaquin Valley Air Pollution Control District does not have a standard system in place to ensure consistency of documentation.

Standardizing logbook entries to include the following may be helpful. This might include:

- Date, time, and initials of the person(s) who have arrived at the site.
- Visitors.
- Brief description of the weather (e.g., clear, breezy, sunny, raining).
- Brief description of exterior of the site. Any changes that might affect the data should be recorded – for instance, if someone is parking a truck or tractor near the site, this may explain high nitrogen oxide values.
- Any unusual noises, vibrations, or anything out of the ordinary.
- Records of any station maintenance or routine operations performed.
- Description of the work accomplished at the site (e.g., calibrated instruments, repaired analyzer).
- Dates that instrumentation were repaired or changed and serial numbers of replacement instruments.
- Detailed information about the instruments that may be needed for repairs or troubleshooting.
- Other pertinent information recorded in other logbooks.

Actions Taken or Planned to Correct the Cause:

Short Term: The District is in the process of updating documentation procedures and

modifying its current site logbooks. Furthermore, additional training will be provided or sought to enforce proper logbook entries covering various scenarios/situations to ensure that all air monitoring staff is aware of the required information prior to visiting a site and is consistently documenting the information in the site logbook.

Long Term: The District has committed to upgrading its data acquisition/data management system. A portion of the data acquisition/data management system upgrade will be to address the use of an electronic station log book, which will allow for specific details to be entered at the site and later reviewed from the District's office locations.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The District will implement its short term strategy by the end of the 2nd Quarter 2013. However, the long term strategy completion dates will be based on the District's transition to the new data acquisition/data management system and agreed to by the Air Resources Board and the Environmental Protection Agency.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 7

Finding:
There is no documentation of management review of station logbooks and other site activities for San Joaquin Valley Air Pollution Control District operated sites.
Description of the Problem:
The monitoring manager plays a very active oversight role, including in-person site visits and checks of log books and maintenance sheets. This practice is very useful and should be documented by initialing the site logbook or maintenance sheet, to indicate what was reviewed. If the vacant position of senior technician were filled, that person could assume some of the responsibilities currently performed by the manager, including this oversight role.
Actions Taken or Planned to Correct the Cause:
***Short Term**:* the District has a provided a directive to begin conducting manual reviews of the station logs on at least bi-annual frequency. ***Long Term**;* the District plans to implement an upper level of review with respect to the station logs. As part of the District's efforts to upgrade its data acquisition/data management system, electronic station log books are being evaluated which would allow the necessary review from the District's office locations.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The District has implemented its short term strategy. However, the long term strategy is a multiple year project; completion dates will need to be based on the District's transition to the new data acquisition/data management system and agreed to by the Air Resources Board and the Environmental Protection Agency.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Finding Number: SJV7

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 8

Finding:
San Joaquin Valley Air Pollution Control District site operators do not have a quick visual way to identify changes in instrument performance or quality control checks that would indicate instrument issues, nor do they have the ability to remotely check on data or site operations.
Description of the Problem:
The San Joaquin Valley Air Pollution Control District's monitoring network covers a large geographic area, so identifying efficiencies for site operators in their routine site maintenance is critical for resource management. Operators spend much time verifying data. Providing remote access capability to real-time site data or instrument meta-data would help identify priority issues and make the operator's trips to the sites more efficient. Visual tools to track instrument performance or quality control checks would also reduce the amount of time needed for level 1 data validation review.
Actions Taken or Planned to Correct the Cause:
The District currently has systems in place that provide the station operators with the ability to remotely review instrument operations in real-time. Additionally, the District is currently engaged in a pilot project to upgrade its data acquisition/data management system that will significantly improve this ability once deployed to other sites.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
This is a multiple year project; completion dates will need to be based on the District's transition to the new data acquisition/data management system and agreed to by the California Air Resources Board and the Environmental Protection Agency.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding

Finding Number: SJV8

Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 9

Finding:
The San Joaquin Valley Air Pollution Control District experiences data loss due to instrument malfunction.
Description of the Problem:
Even though routine maintenance and calibrations are scheduled to minimize it, significant downtime occurs, possibly the result of running instruments beyond the expected life cycle, and past the time when support from the manufacturer is available.
Actions Taken or Planned to Correct the Cause:
The District's air monitoring network undergoes an annual review, which focuses on the operational status of all existing equipment and future needs. During this process, decisions are made as to which units require replacement and when they will be replaced. The ongoing purchase and replacement of equipment at the air monitoring sites has improved the operational readiness and reliability of the network. Equipment deficiencies identified during the technical system audit had been resolved within six (6) months of the technical system audit. Additionally, efforts to inform the Environmental Protection Agency of ongoing equipment needs and funding will become a greater part of the District's budget and network review process.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The District has implemented this corrective action, but will continue its effort to address these types of deficiencies.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: SJV9

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 10

Finding:
It is unclear whether the San Joaquin Valley Air Pollution Control District is using appropriate criteria to invalidate or flag particulate matter 10 data.
Description of the Problem:
The San Joaquin Valley Air Pollution Control District has a thorough, multi-level data validation process, but it is unclear that appropriate criteria are being used to invalidate or flag data, specifically in the case of continuous particulate matter data. Standard data review and validation procedures should be documented in detail, including the criteria used to flag and invalidate data.
Actions Taken or Planned to Correct the Cause:
The District is in the process of developing procedures that document or establishes criteria for data validation or flagging. The District's current standard operating procedure on data handling/review will need to be updated to address this deficiency along with the establishment of other standard operating procedures that the air monitoring program is currently lacking. However, the standard operating procedure dealing with data validation or flagging has been designated as the highest priority.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The action of updating this standard operating procedure will be completed by Jan 31, 2013.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Finding Number: SJV10

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 11

Finding:
The San Joaquin Valley Air Pollution Control District experiences significant resource inefficiencies for staff and management as the current data management system relies solely on manual inputs.
Description of the Problem:
While the San Joaquin Valley Air Pollution Control District's current three-level data review process is very thorough, performing this process entirely by hand is inefficient and very time-consuming. Implementing a new data management system should decrease the amount of time needed for this task and free up much-needed resources. In developing a new system, all staff involved in the current review process should participate, as well as talking to other monitoring agencies that have recently developed these systems, to ensure that any system under consideration encompasses all necessary features.
Actions Taken or Planned to Correct the Cause:
The District has made a sizable investment to upgrade its data acquisition/data management system. The project focuses on automating/streamlining a variety of data handling processes. Once deployed, the manual handling of data will be significantly decreased leaving more time for site operators to focus on maintenance/repair activities.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The target date for completion of this action is 4th Quarter 2013 or sooner. The final date will be based on the District's transition to a new data acquisition/data management system.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?

Finding Number: SJV11

Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks:

Corrective Action Form

Agency: California Air Resources Board
Audit Date: Summer 2011
Finding Number: San Joaquin Valley 12

Finding:
The San Joaquin Valley Air Pollution Control District does not have a formal corrective action process in place.
Description of the Problem:
The Environmental Protection Agency's Quality Management Standards (EPA QA/R-2, Quality Improvement Section) require that management and staff "ensure that conditions adverse to quality are" prevented, identified promptly, fully defined, corrected, prevented from recurring, and documented as corrective actions that are tracked to closure. While corrective action seems to be occurring in a timely fashion for most issues, a formal corrective action process would serve as documentation for the issues being resolved, capture the process and keep it consistent through staff or management turnover, and share the results of the corrective action with staff.
Actions Taken or Planned to Correct the Cause:
The District commits to develop a formal corrective action process standard operating procedure. The District will consult with the California Air Resources Board on this standard operating procedure. As stated above the District has an informal process that works well, but lacks sufficient documentation. The goal is to write down what we currently do and formalize it. Additionally, the District's new data acquisition/management system will play a role in this standard operating procedure, so development/revision of this standard operating procedure will need to be tied to the transition to the new system. This standard operating procedure has been designated as the second highest priority.

Timetable for Above Actions	**Point-of-Contact for Corrective Action**
The action of updating this standard operating procedure will be completed by February 28, 2013.	Morgan Lambert, Director of Compliance

Prepared by: Michael Carrera, Compliance Manager
Date: November 21, 2012

[This section to be filled out by the Environmental Protection Agency]

Finding Number: SJV12

Plan to Address Finding
Reviewed by:
Date:
Plan to address finding approved?
Remarks:

Corrective Action Completed
Reviewed by:
Date:

Was the finding adequately addressed to close the finding?
Remarks: